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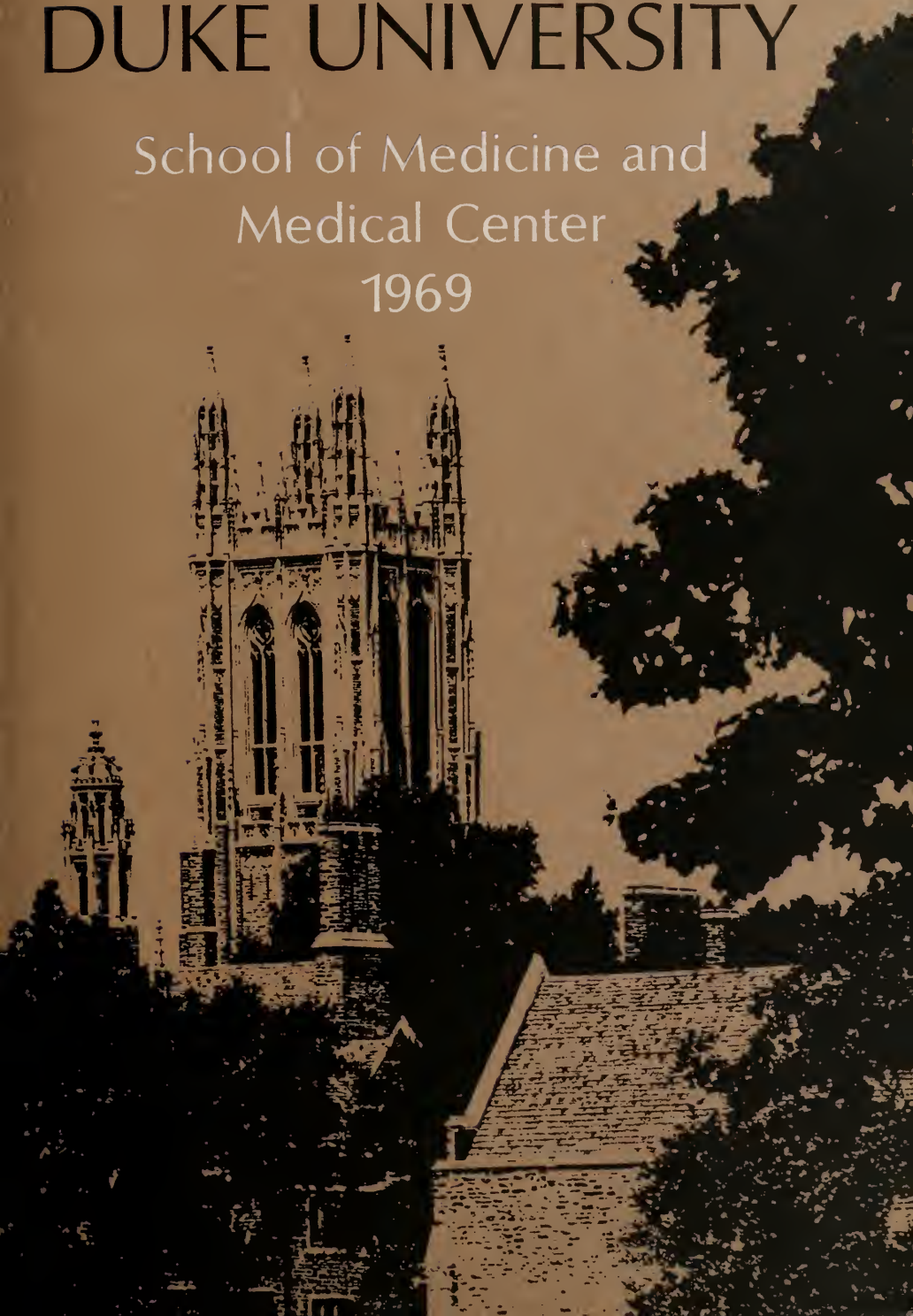
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BULLETIN OF DUKE UNIVERSITY

School of Medicine and Medical Center 1969



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BULLETIN OF DUKE UNIVERSITY

School of Medicine and Medical Center

1969-1970

Durham, North Carolina 1969

Volume 41 May 1969 Number 7—A

The **Bulletin of Duke University** is published monthly except in July, August, September, and December by Duke University, Duke Station, Durham, N. C. 27706. Second-class postage paid at Durham, N. C.

Archives
378.756
D 877 HA
v. 41
1968/69
pt. 2

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Medical School Calendar

1969-1970

First Year Students

1969

September

2 Tuesday—Registration, orientation and first day of academic year, 1969-70
3 Wednesday—Examination day
4 Thursday—Begin classes—Term 1

November

27 Thursday—Thanksgiving holiday

December

1 Monday—Classes resume
20 Saturday—Begin Christmas holiday

1970

January

5 Monday—Classes resume
23 Friday—End Term 1
26 Monday—Begin Term 2

March

11 Wednesday—Registration for summer term, 1970 and Terms 1, 2, 3, 4, 5, 1970-71. (Second Year Clinical Core Rotations)

April

11 Saturday—Begin spring vacation
20 Monday—Classes resume

May

22 Friday—Examination day

June

5 Friday—End Term 2
16 Tuesday—National Boards Part I
17 Wednesday—National Boards Part I
22 Monday—Begin optional summer term, 1970. (Second Year Clinical Core Rotations)

July

4 Saturday—Independence Day holiday

August

7 Friday—End optional summer term

Second Year Students

1969

September

2 Tuesday—First day of academic year, 1969-70. Begin Emergency and Disaster Surgery Course
9 Tuesday—Begin Term 1 (Clinical Core Rotations)

October

24 Friday—End Term 1
27 Monday—Begin Term 2

November

27 Thursday—Thanksgiving holiday

December

12 Friday—End Term 2
15 Monday—Begin Term 3
21 Sunday—Begin Christmas holiday

1970

January

5 Monday—Classes resume

February

13 Friday—End Term 3
16 Monday—Begin Term 4

March

18 Wednesday—Registration for summer term, 1970 and Terms 1, 2, 3, 4, 1970-71. (Third Year Elective Program)
27 Friday—End Term 4. Begin spring vacation

April

13 Monday—Begin Term 5

May

22 Friday—Examination day
29 Friday—End Term 5

June

1 Monday—Begin optional summer term (Third Year Elective Program)

July

4 Saturday—Independence Day holiday
31 Friday—End optional summer term

Third Year Students

1969

September

2 Tuesday—First day of academic year 1969-70. Begin Term 1. (Third Year Elective Program)
18, 20 Thursday, Saturday—Registration for Graduate School fall semester

October

31 Friday—End Term 1

November

3 Monday—Begin Term 2
27 Thursday—Thanksgiving holiday

December

1 Monday—Classes resume
20 Saturday—Begin Christmas holiday

1970

January

5 Monday—Classes resume
26 Monday—Begin Term 3
29–30 Thursday, Friday—Registration for Graduate School spring semester

March

18 Wednesday—Registration for summer term, 1970, and Terms 1, 2, 3, 4, 1970-71. (Fourth Year Elective Program)
20 Friday—End Term 3
Begin spring vacation
30 Monday—Classes resume.
Begin Term 4

May

22 Friday—Examination day
29 Friday—End Term 4

June

1 Monday—Begin optional summer term, 1970
(4th Year Elective Program)

July

4 Saturday—Independence Day holiday
31 Friday—End optional summer term

Fourth Year Students

1969

September

2 Tuesday—First day of academic year 1969-70
Begin Term 1, 1969-70. (Fourth Year Elective Program)

October

31 Friday—End Term 1

November

3 Monday—Begin Term 2
27 Thursday—Thanksgiving holiday

December

1 Monday—Classes resume
8 Monday—Examination day (for students completing M.D. requirements in January, 1970)
20 Saturday—Begin Christmas holiday

1970

January

5 Monday—Classes resume
23 Friday—End Term 2
26 Monday—Begin Term 3

March

20 Friday—End Term 3
Begin spring vacation
30 Monday—Classes resume
Begin Term 4

May

22 Friday—Examination day
29 Friday—End Term 4
31 Sunday—Hippocratic Oath ceremony

June

1 Monday—Graduation exercises



Officers of Administration

General Administration

Douglas Maitland Knight, Ph.D., LL.D., Litt.D., L.H.D., *President of the University*
*Robert Taylor Cole, Ph.D., *Provost*
Frank Leon Ashmore, A.B., *Vice President for Institutional Advancement*
Gerhard Chester Henricksen, M.A., C.P.A., *Vice President and Treasurer*
Everett Harold Hopkins, M.A., LL.D., *Vice President for Regional Programs, Assistant Provost*
Charles B. Huestis, *Vice President for Business and Finance*
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Frank Traver de Vyver, Ph.D., *Vice Provost*
Harold Walter Lewis, Ph.D., *Vice Provost and Dean of Arts and Sciences*
Richard Lionel Predmore, D.M.L., *Vice Provost and Dean of the Graduate School*
Craufurd David Goodwin, Ph.D., *Vice Provost*
William J. Griffith, A.B., *Assistant to the Provost in the Area of Student Affairs*
Benjamin Edward Powell, Ph.D., *Librarian*
Richard Lovejoy Tuthill, Ed.D., *University Registrar*
Rufus H. Powell, LL.B., *Secretary of the University*
Stephen Cannada Harward, A.B., C.P.A., *Assistant Secretary and Controller*
Edwin Constant Bryson, LL.B., *University Counsel*

Duke University Medical Center

Dr. William G. Anlyan, M.D., *Associate Provost in charge of Medical Affairs and Dean, School of Medicine*

*Provost through 1-15-69; Marcus E. Hobbs, Ph.D., elected Provost.
†Associate Provost through 1-15-69; W. G. Anlyan, M.D., elected Associate Provost; Barnes Woodhall appointed Special Assistant to the President.

Dr. Myrtle Irene Brown, R.N., Ph.D., *Dean, School of Nursing, and Director of Patient Care*
Dr. Wilburt C. Davison, M.D., *Dean Emeritus, School of Medicine*
Dr. E. Croft Long, M.B., B.S., Ph.D., *Associate Dean for Undergraduate Medical Education*
Dr. Stuart M. Sessoms, M.D., *Associate Dean for Clinical Sciences and Director, Duke Hospital*
Dr. Morton D. Bogdonoff, M.D., *Assistant Dean for Graduate Medical Education*
Dr. William J. A. DeMaria, M.D., *Assistant Dean for Continuing Medical Education*
Dr. Jane G. Elchlepp, M.D., Ph.D., *Assistant Dean for Planning*
Dr. Helen T. Kotin, M.D., *Assistant Dean for Research*
Dr. William M. Nicholson, M.D., *Assistant Dean Emeritus, Postgraduate and Continuing Medical Education*
Dr. Suydam Osterhout, M.D., *Assistant Dean for Admissions*
Mr. Charles H. Frenzel, A.B., *Director, Program in Hospital Administration*
Mr. Ronald A. Lochbaum, B.S., C.P.A., *Controller, Medical Center*
Dr. A. Wendell Musser, M.D., *Director, Allied Health Education Program*
Mr. Louis E. Swanson, A.B., *Director of Planning*

Medical School Advisory Committee

Standing Committees of The School of Medicine

Admissions

S. Osterhout (*Chairman*), Boyarsky, R. Buckley, Cherny, Duke, Fetter, Fridovich, McCollum, Jones, Portwood, Rhoads, Salzano, H. Thompson

Beaumont

D. B. Hackel (*Chairman*), Berry, LeMay, Mau, Metzgar, Morris, Shingleton, S. D. Smith, Salzano, Spach, Ebert

Cancer Training

W. W. Shingleton (*Chairman*), P. Cavanaugh, Harris, Johnston, Laszlo, Wadsworth, G. Wilbanks

Cardio-Vascular Training

K. S. Grimson (*Chairman*), Harris, McIntosh (ex officio), Wyngaarden, Tosteson, Lester, Sabiston

Clinical Research Advisory

M. D. Bogdonoff (*Chairman*), B. Anderson, Jr., Capp, Crenshaw, Ebert, Fridovich, K. Hall, Hein, Sidbury

Clinical Service Laboratories

T. D. Kinney (*Chairman*), Sessoms, Osterhout, P. Smith, Habig

Continuing Education

W. J. A. DeMaria (*Chairman*), Baylin, Capp, Cherny, Crenshaw, Fetter, Gianturco, Gunnells, McFarland, Nicholson, Sessoms, Mauney

Curriculum

E. C. Long (*Chairman*), Andreoli, Hackel, Rosse

Davison Scholarship

E. C. Long (*Chairman*), Nashold, W. P. J. Peete, plus two student representatives

Durham Veterans Hospital Dean's Committee

W. G. Anlyan (*Chairman*), R. Robinson, I. Brown, Busse, Dent, Kinney, Lester, Wyngaarden, Sabiston, Wadsworth

Hospital Advisory

S. M. Sessoms (*Chairman*), Anlyan, Woodhall, Frenzel, Brown, Bedard, Busse, Estes, Katz, Kinney, R. Parker, Lester, Sabiston, Wadsworth, Wyngaarden

Isotope

H. Kamin (*Chairman*), Lester, Harris, Sanders, Tyor, Jennings, C. Knight, Goodrich

Library

S. M. Sessoms (*Chairman*), Bernheim, Bowser, Cavanagh, R. Hill, Hine, Long, Nashold, Sabiston, D. T. Smith, one medical and one nursing student representative

Medical Care

H. Lowenbach (*Chairman*), Bedard, Brumley, Cherny, Estes, Evans, Goldner, Kernodle, McCauley (ex officio), McFarland, McPherson, Martin

Utilization Review Committee (Standing Subcommittee of the Medical Care Committee)

Lowenbach (*Chairman*), Bedard, Evans, Kernodle, McCauley, McFarland, Martin

Medical Center Facilities

L. Swanson (*Chairman*), Cherny, Crossland, Estes, Kay, J. W. Moore, W. Wilson, Young, Elchlepp, Nolan, Lester

Medical Education for National Defense

*R. A. Mladick (*Coordinator*), B. Carter, Chandler, Fowler, Johnsrude, Klein, McColm, Porter, Portwood, Wilbanks, Veit, Straube, Hawkins, Agnello, Pelkonen, Howell

Outpatient Policy

R. Klein (*Chairman*), Cherny, DeMaria, Llewellyn, W. P. J. Peete, Chandler, Sticht, Veit

Rehabilitation Planning

S. Boyarsky (*Chairman*), Bedard, Clippinger, Gerber, Gregg, Heyman, Kaiser, Morris, Nashold, Vaughan, Veit, Short, Sticht, Goldner, Titus, Sessoms, Anlyan

Research Award

H. T. Kotin (*Chairman*), R. Bressler, Harris, Metzgar, Semans, Vogel

Student Fellowships

E. C. Long (*Chairman*), Sealy, Sidbury



Duke Hospital

Administrative Staff

Stuart M. Sessoms, M.D., *Hospital Director, Professor of Medicine and Associate Dean for Clinical Sciences*
Ralph E. Jennings, *Associate Director and Instructor in Hospital Administration*
Evelyn Bedard, *Associate Director for Nursing, Director of Nursing Service, and Assistant Professor of Nursing*
James W. Anderson, *Assistant Director, Financial Services*
C. Edward McCauley, *Assistant Director*
George H. Mack, *Administrative Associate*
Howard R. Veit, *Administrative Associate, Outpatient Services*
Francis N. Gay, *Personnel Director*
P. Wesley Aitken, *Chaplain*

Private Diagnostic Clinic Staff

Clarence H. Cobb, *Business Manager, Medical Division and Instructor in Hospital Administration*
Roy N. Crenshaw, *Business Manager, Surgical Division*
Ralph Hawkins, *Assistant Business Manager, Medical Division*
H. D. Maynard, *Assistant Business Manager, Surgical Division*
George A. Whiteside, *Assistant Business Manager, Medical Division*

Technical Staff and Heads of Hospital Divisions

Kenneth D. Hall, M.D., *Director, Blood Gas Laboratory, and Associate Professor of Anesthesiology*
Harry Gardner, *Superintendent, Building Operations*
Helen McLachlin, *Acting Director and Associate Professor of Dietetics*
Houston R. Anderson, *Technical Director, Inhalation Therapy*
I. Thomas Reamer, *Pharmacist and Associate in Pharmacy*

Betty W. Kernodle, *Director, Medical Records Department*
Miriam Jacobs, Ph.D., *Director and Associate Professor of Physical Therapy*
Bert R. Titus, *Director and Assistant Professor of Orthosis and Prosthesis*
Mildred Cheek, *Executive Housekeeper*
Cecil Carden, *Director, Printing Department*
Leatrice B. Emory, *Supervisor, Electrocardiographic and Basal Metabolic Laboratory*
Preston W. Smith, *Supervisor, Private Medical Laboratory, and Technical Associate in Laboratory Science*
Edward T. Parrish, *Manager, Laundry*
Gretchen J. Cheek, *Central Supply Services*
Sara J. Dent, M.D., *Chairman of Department of Anesthesiology and Professor of Anesthesiology*
Richard G. Lester, M.D., *Professor of Radiology and Chairman of the Department*
W. W. Smith, M.D., *Director, Blood Bank, and Professor of Surgery*
Robert Habig, *Acting Director, Clinical Chemistry Laboratories, and Instructor in Biochemistry*
Suydam Osterhout, M.D., *Director, Microbiology Laboratories, and Associate Professor of Microbiology*

Internships and Residences

Straight internships of one year duration are available in Medicine, Surgery, Pathology, and Pediatrics, and two mixed internships are offered in Obstetrics and Pediatrics. Appointments are from July 1 through June 30 with few exceptions. Interns receive a stipend of $240.00 per month, with professional liability insurance, uniforms, and laundry of uniforms provided.

The Residencies offered, with the chairman or chief of each service, are as follows:

Anesthesiology	(Chm.)	Sara J. Dent, M.D.
Internal Medicine	(Chm.)	James B. Wyngaarden, M.D.
Dermatology		J. Lamar Callaway, M.D.
Neurology		Albert Heyman, M.D.
Obstetrics and Gynecology	(Chm.)	Roy T. Parker, M.D.
Ophthalmology	(Chm.)	Joseph A. C. Wadsworth, M.D.
Pathology	(Chm.)	Thomas D. Kinney, M.D.
Pediatrics	(Chm.)	Samuel Katz, M.D.
Pediatric Allergy		Susan C. Dees, M.D.
Pediatric Cardiology		Madison S. Spach, M.D.
Psychiatry	(Chm.)	Ewald W. Busse, M.D.
Radiology	(Chm.)	Richard G. Lester, M.D.
Surgery	(Chm.)	David C. Sabiston, Jr., M.D.

General Surgery	William W. Shingleton, M.D.
Neurosurgery	Guy L. Odom, M.D.
Oral Surgery	Nicholas G. Georgiade, M.D.
Orthopaedic Surgery	J. Leonard Goldner, M.D.
Otolaryngology	William R. Hudson, M.D.
Plastic Surgery	Kenneth L. Pickrell, M.D.
Thoracic Surgery	Will C. Sealy, M.D.
Urologic Surgery	James F. Glenn, M.D.

Application forms and information for internships, residences, or fellowships may be obtained by writing to the Chairman of Department, Duke University Medical Center, Durham, North Carolina. Both men and women graduates of any Class A Medical School are eligible for appointment. While internships are rarely available to graduates of medical schools outside the United States and Canada, a limited number of residencies and research fellowships are available from time to time in which case certification by E.C.F.M.G. (Educational Council on Foreign Medical Graduates, 1710 Orrington Avenue, Evanston, Illinois) is prerequisite.

Duke University Medical Center is a participating member of the National Intern Matching Program, 2530 North Ridge Avenue, Evanston, Illinois, and all applicants must register with this program. The Hospital is a member of the American Hospital Association, is approved by the American Medical Association for internship and residency training, and is fully approved by the Joint Commission on Accreditation of Hospitals.

As the Duke University Medical Center is an integral part of Duke University, its educational, recreational, and athletic facilities are available for the resident staff.

The Durham Veterans Administration Hospital adjoins the Duke University Campus, and is operated under the supervision of the Dean's Committee of the Duke University School of Medicine. The full time professional staff of the V.A. Hospital are all members of the School of Medicine faculty. All training programs are integrated with corresponding programs at Duke University Medical Center, which includes rotating of house officers to each hospital from time to time.

Continuing Education

Professor W. J. DeMaria, *Assistant Dean, Continuing Education*; Professor W. Nicholson, *Assistant Dean Emeritus, Continuing Education*

Throughout the entire year there are many formal courses of postgraduate instruction. These include subjects for the generalist as well as for the various specialists. Announcements concerning these symposia will be made from time to time. In addition, there are numerous regular specialty conferences in all clinical departments which graduates in medicine are welcome to attend.

Faculty and Staff

Wallace Dare Abbey, D.D.S. (Ohio State, 1964), *Associate in Surgery in Division of Orthodontics*

Richard G. Absher, B.S. (New Mexico, 1962), *Research Associate in Surgery*

Trogler Francis Adkins, M.D. (Duke, 1936), *Assistant Clinical Professor of Obstetrics and Gynecology*

Sam A. Agnello, A.B. (Duke, 1939), *Director of the Division of Audio-visual Education and Coordinator of Medical Television*

Marion M. Ahbe, R.T. (Duke, 1965), *Technical Instructor*

Paul W. Aitken, B.D. (Duke, 1955), Th.M. (Duke, 1961), *Duke Hospital Chaplain*

Irving Alexander, Ph.D. (Princeton, 1949), *Professor of Medical Psychology; Professor of Psychology; and Chairman of the Department of Psychology*

Richard J. Alexander, M.D. (Texas, 1958), *Instructor in Psychiatry*

Pamela Allen, B.A., R.P.T., *Assistant in Physical Therapy*

John C. Altrocchi, Ph.D. (California, 1957), *Associate Professor of Medical Psychology and Assistant Professor of Psychology*

Edwin P. Alyea, M.D. (Johns Hopkins, 1923), *Emeritus Professor of Urology and Emeritus Chief of the Division of Urologic Surgery*

Joseph M. Amatulli, C.T. (Johns Hopkins, 1959), *Instructor in Cytotechnology*

Marcelina Amaya, M.D. (Univ. Nacional Autonoma de Mexico, 1954), *Associate in Psychiatry*

D. Bernard Amos, M.D. (London, 1951), *James B. Duke Professor of Immunology and Experimental Surgery*

E. Everett Anderson, M.D. (Duke, 1958), *Assistant Professor of Urology*

James W. Anderson, B.B.A. (Miami, 1951), C.P.A. (1955), *Assistant Director, Financial Services, Duke Hospital*

Nels Anderson, Ph.D. (Purdue, 1964), *Assistant Professor of Physiology and Pharmacology and Assistant Professor of Obstetrics and Gynecology*

W. Banks Anderson, Jr., M.D. (Harvard, 1956), *Associate Professor of Ophthalmology*

W. Banks Anderson, Sr., M.D. (Johns Hopkins, 1924), *Professor Emeritus of Ophthalmology and Emeritus Chief of the Division of Ophthalmology*

William B. Anderson, M.D. (Minnesota, 1948), *Assistant Professor of Psychiatry*

Thomas E. Andreoli, M.D. (Georgetown, 1960), *Assistant Professor of Medicine and Assistant Professor of Physiology*

William F. Andrews, A.B. (Duke, 1948), *Clinical Preceptor in Hospital Administration and Administrator, Memorial Hospital, Wake County*

William G. Anlyan, M.D. (Yale, 1949), *Professor of Surgery and Dean of the School of Medicine*

Stanley H. Appel, M.D. (Columbia, 1960), *Associate Professor of Medicine*

Jay Morris Arena, M.D. (Duke, 1932), *Professor of Pediatrics*

Clay M. Armstrong, M.D. (Washington Univ., 1960), *Assistant Professor of Medicine and Assistant Professor of Physiology*

Tryggvi Asmundsson, M.D. (Iceland, 1964), *Instructor in Medicine*

Kurt W. Back, Ph.D. (Massachusetts Inst. of Tech., 1949), *Professor of Medical Sociology and Professor of Sociology*

Jorge Baez-Garcia, M.D. (Duke, 1962), *Instructor in Medicine*

Clarence A. Bailey, Jr., M.D. (North Carolina, 1958), *Clinical Instructor in Pediatrics*

Barbara Baker, B.S., P.T. Certificate (Tufts, 1946), *Clinical Instructor in Physical Therapy*

Lenox D. Baker, M.D. (Duke, 1933), *Professor of Orthopaedic Surgery*

Virgil D. Baker, M.S. (Emory, 1966), *Associate in Radiology*

Marie Baldwin, M.D. (South Carolina, 1929), *Assistant Professor of Psychiatry, Staff, Highland Hospital, Asheville, N.C.*

John R. Ball, M.S.W. (North Carolina, 1962), *Instructor in Psychiatric Social Work*

Kathryn Barclay, M.S.W. (Tulane, 1946), *Assistant Professor of Psychiatric Social Work*

Sherwood W. Barefoot, M.D. (Duke, 1938), *Clinical Associate in Dermatology, Greensboro, N.C.*

Joseph E. Barnes, B.S. (Carnegie Tech., 1939), M.B.A. (Chicago, 1947), *Clinical Preceptor in Hospital Administration and Director, Rex Hospital, Raleigh, N.C.*

Jean S. Barr, M.S. (Case Western Reserve, 1967), *Instructor in Physical Therapy*

William F. Barry, Jr., M.D. (Pennsylvania, 1946), *Associate Professor of Radiology and Assistant Professor of Medicine*

Frank H. Bassett, III, M.D. (Louisville, 1957), *Assistant Professor of Anatomy and Associate Professor of Orthopaedic Surgery*

Woodrow W. Batten, M.D. (Bowman Gray, 1944), *Clinical Associate in Medicine, Smithfield, N.C.*

George J. Baylin, M.D. (Duke, 1937), *Professor of Radiology and Associate in Anatomy*

Dorothy W. Beard, R.N. (Vanderbilt, 1929), *Associate in Surgery and Research Associate in Experimental Surgery*

Joseph W. Beard, M.D. (Vanderbilt, 1929), *James B. Duke Professor of Surgery in Charge of Experimental Surgery and Professor of Virology*

R. Frederick Becker, Ph.D. (Northwestern, 1940), *Associate Professor of Anatomy*

Victor S. Behar, M.D. (Duke, 1961), *Associate in Medicine*

Bernice A. Belue, B.S. (Alabama, 1948), O.T.R. (Washington Univ., 1956), *Director of Occupational Therapy*

Raymond C. Bender, Ph.D. (Cornell, 1931), *Research Associate in Surgery*

Cleaves M. Bennett, M.D. (Rochester, 1960), *Associate in Medicine*

Robert E. Benway, M.D. (Miami, 1957), *Associate in Anesthesia*

Frederick Bernheim, Ph.D. (Cambridge, 1928), *James B. Duke Professor of Pharmacology*

Mary L. C. Bernheim, Ph.D. (Cambridge, 1928), *Professor of Biochemistry*

Harold L. Bettis, B.A. (Lenoir Rhyne, 1939), *Clinical Preceptor in Hospital Administration and Director, Moses H. Cone Hospital, Greensboro, N.C.*

Warren P. Bird, B.S. (Georgetown, 1956), M.S. (Columbia, 1964), *Assistant Professor of Medical Literature and Associate Director, Medical Center Library*

Carl M. Bishop, *Technical Associate in Pathology*

Robert L. Blake, *Associate in Medical Art and Illustration, Division of Audiovisual Education*

Robert G. Blaker, Ph.D. (Pennsylvania, 1958), *Assistant Professor of Pathology*

J. J. Blum, Ph.D. (Chicago, 1952), *Professor of Physiology*

Edna Blumenthal, B.S., R.P.T. (Cincinnati, 1935), *Associate in Physical Therapy*

Morton D. Bogdonoff, M.D. (Cornell, 1948), *Professor of Medicine and Assistant Dean for Graduate Medical Education*

John P. Boineau, M.D. (Duke, 1959), *Assistant Professor of Medicine and Associate Professor of Pediatrics*

Robert A. Bonar, Ph.D. (California, 1953), *Associate Professor of Biophysics*

Lloyd J. Borstelmann, Ph.D. (California, 1950), *Associate Professor of Medical Psychology and Associate Professor of Psychology*

M. Bourgeois-Gavardin, M.D. (Paris, France, 1945; Duke, 1955), *Clinical Associate in Anesthesiology*

Francis Norman Bowles, M.D. (Med. Coll. of Virginia, 1924), *Clinical Instructor in Obstetrics and Gynecology*

Saul Boyarsky, M.D. (Vermont, 1946), *Assistant Professor of Physiology and Professor of Urology*

Delos W. Boyer, M.D. (George Washington, 1950), *Clinical Instructor in Orthopaedics, Danville, Va.*

William Boyle, Ph.D. (Glasgow, 1958), *Assistant Professor of Immunology*

Robert G. Bradbury, M.D. (South Carolina, 1958), *Instructor in Radiology*

William D. Bradford, M.D. (Western Reserve, 1948), *Associate in Pediatrics and Assistant Professor of Pathology*

Ralph W. Brauer, Ph.D. (Rochester, 1943), *Professor of Physiology and Pharmacology*

Sumter C. Brawley, III, B.S. (North Carolina State, 1963), *Instructor in Electronics*

Patrick J. Breen, F.F.A. (Royal Coll. of Surgeons, 1966), *Assistant Professor of Anesthesiology*

Klaus Brendel, M.D. (Berlin, 1962), *Assistant Professor of Physiology*

Marianne S. Breslin, M.D. (Duesseldorf, 1946), *Associate Professor of Psychiatry*

Bernard Bressler, M.D. (Washington Univ., 1942), *Professor of Psychiatry*

Rubin Bressler, M.D. (Duke, 1957), *Professor of Medicine and Endocrinology and Pharmacology; Director, Diabetic Clinic*

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†Leave of Absence Academic Year 1968-69.

Rebecca Hatcher Buckley, M.D. (North Carolina, 1958), *Assistant Professor of Pediatrics and Associate in Immunology*

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Raymond L. Howard, *Instructor in Medical Photography*
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Stuart M. Sessoms, M.D. (Med. Coll. of Va., 1946), *Professor of Medicine; Director of Duke Hospital; and Associate Dean for Clinical Sciences*

Kathryn W. Sharpe, A.B. (Duke, 1960), *Instructor in Radiology*

Dorothy B. Shearin, M.D. (Woman's Med. Coll. of Pennsylvania, 1954), *Assistant Clinical Professor of Pediatrics*

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James B. Sidbury, Jr., M.D. (Columbia, 1947), *Professor of Pediatrics, Director of Clinical Research Unit, and Professor of Endocrinology*

Lewis M. Siegel, Ph.D. (Johns Hopkins, 1965), *Assistant Professor of Biochemistry*

Herbert O. Sieker, M.D. (Washington Univ., 1948), *Professor of Medicine*

Harold R. Silberman, M.D. (Washington Univ., 1956), *Assistant Professor of Medicine*

Donald Silver, M.D. (Duke, 1955), *Associate Professor of Surgery*

George A. Silver, M.D. (Duke, 1938), *Associate Professor of Psychiatry*

William V. Singletary, M.D. (Duke, 1943), *Clinical Associate in Medicine, Durham, N.C.*

Benjamin S. Skinner, M.D. (Washington, 1940), *Clinical Instructor in Pediatrics*

Allen D. Smith, M.D. (Georgia, 1937), *Clinical Associate in Dermatology, Durham, N.C.*

David T. Smith, M.D. (Johns Hopkins, 1922), *Professor Emeritus of Community Health Sciences; Associate Professor Emeritus of Medicine; and James B. Duke Professor Emeritus of Microbiology*

Donald S. Smith, II, M.H.A. (Minnesota, 1953), *Program Coordinator and Assistant Professor of Hospital Administration*

Preston W. Smith, *Supervisor, Private Medical Laboratory; Instructor in Medical Technology; and Technical Associate in Clinical Microscopy*

S. Douglas Smith, M.H.A. (Duke, 1966), *Assistant to the Dean, School of Medicine*

Wirt Smith, M.D. (Texas, 1951), *Associate Professor of Experimental Surgery*

Ralph E. Snider, D.D.S. (Ohio State, 1948), *Associate in Dentistry and Staff Dentist of Dental Service, V.A. Hospital, Durham, N.C.*

George G. Somjen, M.D. (New Zealand, 1961), *Associate Professor of Physiology*

Joachim R. Sommer, M.D. (Munich, 1950), *Associate Professor of Pathology*

Michael R. Sottarelli, M.D. (Seton Hall, 1963), *Instructor in Psychiatry and Fellow in Central Nervous System Sciences*

Joanne Southworth, Ph.D. (Med. Coll. of Virginia, 1966), *Associate in Immunology*

Madison Stockton Spach, M.D. (Duke, 1954), *Professor of Pediatrics*

Alexander Spock, M.D. (Maryland, 1955), *Associate Professor of Pediatrics*

George H. Spooner, Ph.D. (North Carolina, 1958), *Assistant Professor of Clinical Pathology*

William Sprunt, M.D. (Harvard, 1945), *Assistant Clinical Professor of Radiology and Chief, Department of Radiology, Wake County Memorial Hospital, Raleigh, N.C.*

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E. Wilson Staub, M.D. (Northwestern, 1957), *Clinical Associate in Surgery, Pinehurst, N.C.*

Eugene Anson Stead, Jr., M.D. (Emory, 1932), *Florence McAlister Professor of Medicine*

Leonard S. Stein, Ph.D. (Duke, 1966), *Instructor in Medical Psychology*

Frank H. Stelling, M.D. (Med. Coll. of Georgia, 1938), *Clinical Lecturer in Orthopaedics and Chief Surgeon, Shriners' Hospital for Crippled Children, Greenville, S.C.*

Delford L. Stickel, M.D. (Duke, 1953), *Associate Professor of Surgery*

Frederick W. Stocker, M.D. (Univ. of Bern, 1920), *Emeritus Clinical Professor of Ophthalmology*

Thomas A. Stokes, M.D. (Duke, 1955), *Clinical Associate in Obstetrics and Gynecology*

Regina Stoner, B.S., *Therapeutic Dietitian*

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Edgar E. Strong, M.D. (Med. Coll. of South Carolina, 1961), *Resident and Instructor in Anesthesiology*

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Louis E. Swanson, A.B. (Hamline, 1941), *Director of Planning, Medical Center, and Associate Professor of Hospital Administration*

Timothy Takaro, M.D. (New York, 1943), *Associate Clinical Professor of Surgery*

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Walter Lee Thomas, M.D. (Virginia, 1931), *Professor of Obstetrics and Gynecology*

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James Walter Wilson, Ph.D. (Kentucky, 1965), *Instructor in Anatomy*
William P. Wilson, M.D. (Duke, 1947), *Professor of Psychiatry*
Stefan S. Winkler, M.D. (Tufts, 1960), *Associate in Radiology*
Benjamin Wittels, M.D. (Minnesota, 1952), *Associate Professor of Pathology*
Myron L. Wolbarsht, Ph.D. (Johns Hopkins, 1958), *Professor of Ophthalmology; Associate Professor of Physiology; and Director of Ophthalmic Research*
Max Woodbury, Ph.D. (Michigan, 1948), *Professor of Biomathematics*
Barnes Woodhall, M.D. (Johns Hopkins, 1930), *Professor of Neurosurgery and Associate Provost, Medical Affairs*
Boyd Thomas Worde, M.D. (Tennessee, 1947), *Associate Professor of Radiology*
Samuel N. Workman, M.D. (Med. Coll. of South Carolina, 1960), *Associate in Psychiatry*
Irene A. Wyatt, M.T. (Bowman Gray, 1948), *Instructor in Medical Technology*
Arthur A. Wykes, Ph.D. (Purdue, 1957), *Associate Clinical Professor of Pharmacology*
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Robert Foster Young, M.D. (Emory, 1937), *Assistant Clinical Professor of Community Health Sciences*
W. Glenn Young, Jr., M.D. (Duke, 1948), *Professor of Surgery*
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Douglas P. Zipes, M.D. (Harvard, 1964), *Instructor in Medicine*
Chester Zmijewski, Ph.D. (Buffalo, 1960), *Associate Professor of Immunology*
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William T. Bennett, M.D. (Tulane, 1965), *Fellow in Cardiology*
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James W. Carruth, Jr., M.D. (Duke, 1964), *Assistant Resident in Ophthalmology*
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Wesley A. Cook, Jr., M.D. (Oregon, 1963), *Assistant Resident in Neurosurgery*
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Andrew R. Price, M.D. (Duke, 1965), *Fellow in Renal*
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Diane C. Pross, M.D. (Canada, 1968), *Intern in Pediatrics*
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Ritz C. Ray, Jr., M.D. (Duke, 1961), *Assistant Resident in Psychiatry*
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General Information

In 1924, James Buchanan Duke established The Duke Endowment, and thus made possible the creation of Duke University.

> I have selected Duke University as one of the principal objects of this trust because I recognize that education, when conducted along sane and practical, as opposed to dogmatic and theoretical lines, is, next to religion, the greatest civilizing influence.
>
> I have selected hospitals as another of the principal objects of this trust because I recognize that they have become indispensable institutions, not only by way of ministering to the comfort of the sick, but in increasing the efficiency of mankind and prolonging human life. . . . I very much hope that the people will see to it that adequate and convenient hospitals are assured in their respective communities. . . . It is to these rural districts that we are to look in large measure for the bone and sinew of our country.

In Item VIII of his will, Mr. Duke bequeathed to The Duke Endowment ten million dollars for Duke University, of which four million dollars was to be expended for a medical school, hospital, and nurses' home at Duke University.

Wards and clinics were named for eminent physicians and surgeons in order to remind the staff and students of what has been accomplished in medicine, as well as to follow Mr. Duke's Indenture: "I advise courses in history, especially the lives of the great of the earth."

The Council on Medical Education and Hospitals of the American

Medical Association gave Duke Class A approval in 1929 before the faculty and buildings were completed.

Announcements were then inserted in college papers that applications for the study of medicine, nursing, dietetics, hospital administration, and other health professions would be considered in 1930.

Duke Hospital was opened for patients on July 21, 1930. The first students in hospital administration were admitted on July 1, 1930; the first dietetic student on August 15, 1930; the first medical students (1st and 3rd year) on October 2, 1930; and the first student nurses on January 2, 1931. The schools and hospital were dedicated on April 20, 1931.

On the advice of Dr. Harvey Cushing and Dr. Henry A. Christian of Harvard, most of the faculty were appointed on "geographic" full time, so that private patients could obtain as good medical and surgical care as that given to the charity patients. Therefore, on September 15, 1931, the Private Diagnostic Clinic (PDC) was organized to improve the facilities for private patients, especially for those of moderate means.

Soon other additions became necessary, as students, faculty, and patients increased in numbers. The Baker House (originally for nurses, 1932) and the PDC wing (June, 1940) were provided by The Duke Endowment and Duke University. The W. B. Bell Research Building was started in 1940 with funds from the PDC, the Rockefeller Foundation, the Dorothy Beard Research Fund, and The Duke Endowment and was expanded by funds from the National Institutes of Health, the Markle Foundation, and Duke University. The Erwin Road Nurses' Dormitory (now Hanes House Annex) was built (1943) with funds from The Duke Endowment and the U. S. Public Health Service. The Elizabeth P. Hanes House for Nurses (1950) was a gift from Mrs. Frederic M. Hanes, with additional funds from the N. C. Medical Care Commission. The North Carolina Cerebral Palsy Hospital, which is directed by Duke, was dedicated on March 30, 1950. The Durham Veterans Administration Hospital, which is affiliated with Duke, was completed and dedicated in 1953. The W. S. Rankin Outpatient and PDC wing (1954) were financed by the PDC, The Duke Endowment, and the N. C. Medical Care Commission. The Geriatrics and the Diagnostic and Treatment wings (1963) were built with funds from the National Institutes of Health, the PDC, and The Duke Endowment.

Additional patient care facilities and an enlarged emergency outpatient clinic were provided in 1967 with the opening of the Main Entrance Building and in 1968 with occupancy of Rehabilition Facility I. Designed to house an extensive hyperbaric facility and related research laboratories, Clinical Research II was completed in 1967. In December, 1968, the Nanaline H. Duke Medical Sciences Building was dedicated. This facility contains the research and teaching programs of several preclinical departments.

Today, Duke University Medical Center continues to strive to lead contemporary medicine. This involves maintaining superiority in its four

primary functions: unexcelled patient care, dedication to its educational programs, national and international distinction in the quality of its research, and service to the region.

Growth is identified with a deeper involvement in the social aspects of health, the establishment of many advanced therapeutic and research facilities, a building program that will require one or more decades for its completion, and a new and imaginative revision of the medical teaching program that has attracted the attention of educators across the globe.

In the years to come, Duke University Medical Center will continue to adapt, experiment, and innovate in all aspects of its functions, basing changes upon its traditions and upon its aspirations for service to mankind everywhere.



Courses of Study and Requirements for Degrees

The New Medical Curriculum

In recent years, analysis and appraisal of the curriculum in medical schools has caused changes in many. Several factors have required these changes, important among them being the increasing scope and complexity of medicine generally, and the dissatisfaction with the sharp cleavage between basic science and clinical years. As a result of long study, the Duke University School of Medicine instituted a major revision of the curriculum beginning with the class starting in the Fall of 1966.

The aims of the present curriculum are: (1) to provide a strong academic basis for a lifetime of growth within the profession of medicine, with the development of technical competency, proficiency, and the proper attitudes peculiar to the practice of medicine as well as appreciation of the broader social and service responsibilities; (2) to establish for the first year a basic science program which will fulfill the purposes of the increasingly heterogeneous student body; (3) to offer both clinical and basic science education simultaneously; (4) to permit the student to explore his personal intellectual preferences and capabilities; (5) to allow study in depth in selected areas, either clinical or basic science; (6) to provide greater freedom of course selection and thus to encourage earlier career decision; and (7) to achieve better

integration of the medical school curriculum with residency training and the practice of medicine.

The curriculum, while offering a previously unattainable degree of flexibility to medical education and new opportunities for intellectual exploration, also makes heavy demands upon the student. It should be recognized that a medical student at Duke University School of Medicine is expected to maintain a consistent level of attainment and to demonstrate qualities of initiative and dedication to his chosen profession. A scholarly attitude to medicine that will continue throughout an entire career is an important objective of the medical school. The foundations of this attitude to learning should accompany the student when he enters.

It is expected that students will dedicate daily several hours to private study, utilizing the resources available in the Medical Center library and those provided by themselves and by other facilities of Duke University. During the University term, private study should also occupy part of each weekend.

The curriculum calls for major contributions of independent effort and individual initiative from the first day of medical school onward. Members of the medical school faculty should be regarded not as the teachers of didactic information but as guides to learning, whose opinions may be questioned in sincerity.

A student is expected to maintain at all times a professional attitude toward patients, to respect confidences and to recognize that he is the recipient of privileged information only to be discussed within the context of scholarship and in circumstances that truly contribute to the educational process or the care of the patient. This attitude involves consideration not only of speech and personal appearance but also of morality, honor, and integrity.

A special examination will be taken annually by all medical students. The examination, comprising two 3-hour papers, is administered on a single day each year. Freshmen medical students take this examination on the second day of medical school, in addition to subsequent examinations in May. The results of these examinations will be recorded in each student's record. In addition all students are required to take Part I of the National Board Examinations at the end of their first year of medical school.

Doctor of Medicine Degree

The degree of Doctor of Medicine is awarded upon approval by the faculty of Duke University to those students who have completed the curriculum of the School of Medicine to the satisfaction of the Medical School Advisory Committee, and who have demonstrated their fitness to

practice medicine by adherence to a high standard of ethical behavior and morality and paid or made satisfactory arrangements to pay all indebtedness to the University.

Course Requirements

First Year

The student will study the principles of all the basic science disciplines. Rather than mastering an encyclopedic array of facts, the purpose will be to acquire familiarity with the major principles of each subject. An introduction to clinical medicine, will be presented by the clinical services. The year will be divided into two terms, each of eighteen weeks, as follows:

Term 1	*Hours*
Anatomy	200
Biochemistry	173
Physiology	131
Human Behavior	46
Basic Neurological Sciences	91
Orientation	6
Unassigned time for study	137
	784

Term 2	*Hours*
Pathology	206
Clinico-Pathological Conferences	10
Microbiology	145
Pharmacology	115
Human Behavior	13
Introduction to Clinical Medicine	106
Genetics	32
Unassigned time for study	157
	784

Second Year

The second year will provide an exposure to clinical science disciplines permitting the student early in his career to become a participant in the care of patients. The acquired appreciation of the problems of the clinical areas and the opportunities to recognize the applications of the basic sciences should lead to a more meaningful selection of courses for the subsequent two years. The second year will be divided into five terms of

approximately seven weeks each as follows: Medicine, Obstetrics, Pediatrics, Psychiatry, and Surgery.

In addition, instruction will take place in Community Health Sciences (70 hours); Radiology (72 hours); and Emergency and Disaster Surgery (44 hours).

Third and Fourth Years

These two years will be made up of elective courses, as flexible as possible within requisite limitations. Each student will select professional advisors from the preclinical and clinical faculties. These individuals will assist the student in formulating his program for the third and fourth years. Approximately one-half the time will be spent in basic science and one-half in clinical science. Completion of the Medical Research Training Program or one of the special study programs may fulfill the requirements for basic science.

The elective courses of study offered are described under each department. The wide selection affords an opportunity for each student to design his program to satisfy best his needs in conformity with his medical future, with guidance from his advisors. Note than an asterisk placed before the course number (*ANA-206B) indicates that the course follows the timetable of the Graduate School.

As an alternative after completion of the second year, the student may enroll as a Ph.D. candidate in one of the basic sciences, earning this degree in two or three years. Then, having completed three of the four years necessary for an M.D., he may earn the M.D. degree by completing a fourth clinical year.

The third and fourth years will be divided into four terms of nine weeks each. Certain courses as noted will be offered during the summer term.

Promotion

The records of each student in the first and second years are reviewed periodically by promotion committees, which are made up of the department chairmen. The Medical School Advisory Committee acts on recommendations from these promotion committees and may:

1. Promote to the next year those students whose work is good.
2. Warn those students whose work is less than good that they must improve their scholastic endeavor.
3. Place on probation those students whose work is poor.
4. Request the resignation of any student who is considered an unpromising candidate for the degree of Doctor of Medicine.

A student wishing to appeal a decision may do so to the Dean within two weeks of his notification.

The Dean, with the advice of the Medical School Advisory Committee, reserves the right to require the withdrawal of any student at any time if, in the opinion of the majority of committee members, he should not continue his course.

Combined M.D.-Ph.D. Training Programs

Medical Scientist Training Program

General Information

The Medical Scientist Training Program is conducted under the auspices of the School of Medicine and the Graduate School and is designed for highly qualified students strongly motivated toward a career in medical sciences. The program will require six to seven years of study and will lead to both an M.D. and a Ph.D. degree. It is probably that the graduates of this Program will follow one of two broad paths. Some will embark directly on careers in teaching and research in one of the basic medical sciences, having acquired some understanding of clinical medicine in this Program. Others will enter residency programs with a background of experience in basic science which will allow them to pursue research careers in clinical medicine without the frustrations due to inadequate training in the basic medical sciences.

Eligibility

Applicants must meet the requirements for admission to both the Medical School, as a candidate for the M.D. degree, and the Graduate School, as a candidate for the Ph.D. degree. In addition to the minimum requirements established by the prior acceptance into the Medical School and the Graduate School, additional course work in science and mathematics as well as previous research experience will count heavily in the selection of candidates.

Financial Support

Those students funded will be offered a traineeship award (MSP trainee) which will include a stipend plus a full tuition allowance. The stipend levels are equivalent to the current U.S. Public Health Service predoctoral and postdoctoral fellowships, and an MSP trainee will be supported until he has completed both degrees, as long as his progress is satisfactory. These stipends include a dependency allowance of $500.00 per dependent. The stipend levels for a seven-year program begin at $2,400.00 with yearly increments to $6,000.00 per year, plus any dependency allowance.

Candidates may also participate as students in the Medical Scientist Training Program without receiving one of the special traineeship awards. Details of the alternate awards will be discussed with candidates on an individual basis.

The Training Program

This program has been designed to offer the student great latitude in the selection of his course material, but the basic requirements will be those described in the following example of a typical program. The first two academic years are composed of the core basic science year and the core clinical science year of the new curriculum for medical students at Duke University. At the completion of the second year, the student enters the graduate program. Following the completion of the requirements for the Ph.D., the student needs one more academic year of clinical training to complete the requirements for the M.D. degree.

Year 1—Core Basic Science Year. This year is made up of material in the basic sciences of anatomy, biochemistry, genetics, microbiology, pathology, pharmacology, and physiology, in addition to an introduction to clinical methods. The students in the Medical Scientist Training Program will work together throughout this first year. At the end of this first year, the student will be familiar with each of the basic sciences and will be in a good position to select his field of graduate study. The summer following the first year can be used in one of two ways: one, the student may spend this time taking additional background courses in mathematics, chemistry, or other fundamental sciences; or two, he may elect to begin his graduate research.

Year 2—Core Clinical Science Year. A comprehensive approach to medicine, oriented to the patient as a whole, will be the basis for the second year curriculum for the medical scientist. During this year, which represents the student's first introduction to clinical medicine, the focus will be upon the total human biological unit rather than upon separate organ systems. The curriculum will be "vertically" integrated, multidisciplinary, and interdepartmental. Stress will be placed upon the continuity of biological processes—from conception through birth, development, and maturation to senescence and death. Special consideration will be given to the pattern of this developmental sequence in the individual, and to the changes in the pattern determined by genetic composition and by alterations brought about through the action of the particular environment in which the patient lives.

During this year the trainee will be taught primarily by one specific group of teacher-investigators from the clinical departments. The program will consist of a special series of seminars and demonstrations plus clinical experience. The clinical experience will parallel the seminar series insofar as possible. For convenience in description, these clinical experiences have been roughly divided into periods. In practice, the

entire year will be organized as a unit both in the seminar and the clinical work.

The initial six weeks will be devoted to obstetrics and gynecology, with its considerations of the adult woman, sterility and infertility, conception, maternity, and birth. Two weeks will then be given to a combined interdisciplinary effort between the departments of Pediatrics and Obstetrics in the area of maternal fetal interaction, birth, and the perinatal period.

The next six weeks will be devoted to pediatrics, with emphasis upon normal development and the aberrations caused by disease. Time will then be allotted to a combined effort of all departments in the area of adolescence, including such social problems as juvenile delinquency.

Medicine, Surgery, and Psychiatry will cooperate in the teaching program during the last 21 weeks of the year. Selected patients from these services will be maintained on a "mixed" ward to facilitate and improve this phase of the student's clinical experience. The different types of patients also provide an excellent opportunity for psychologists, social workers, and others to demonstrate the importance of their respective disciplines and attitudes for these patients. Finally, during the terminal weeks of the year, the student will be given the opportunity to appreciate the problems of senescence and the impact of chronic disease upon the individual and his family.

Years 3, 4, and 5—The Graduate Years. During the third, fourth, and fifth, and, if necessary, the sixth year of the Program, the student will pursue graduate study in order to satisfy the requirements for the Ph.D. degree. These requirements include: (1) completion of necessary coursework, (2) adequate performance in the preliminary examination, (3) original research suitable for a dissertation, and (4) successful defense of the thesis in the final examination. Detailed description of other general requirements for the Ph.D. degree, e.g., competence in two foreign languages are set forth in the *Bulletin of the Graduate School.* The standards of performance during this period will be determined by the individual departments concerned. Further details concerning the individual departments may be obtained by writing to the Director of Graduate Studies in a given department.

The graduate curriculum of each student will be worked out in consultation with the Director of Graduate Studies of the department in which the student chooses to work and will require the approval of the Medical Scientist Training Committee. Since most of the ordering ideas and experimental techniques of all of the medical sciences derive from mathematics and the physical sciences, it is essential to insure that all students in the program have an adequate grounding in these subjects. Because of the close working relationship and geographical proximity of the medical sciences and physical sciences departments at Duke, the setting is unusually favorable for the achievement of that goal.

If the student has not completed a study of differential and integral calculus, including one course in differential equations, he will be required to do so early in his graduate career. This also holds for students who have not had a rigorous course in physical chemistry. In addition to the aforesaid courses which are recommended for all students in the Program, selected students, depending upon their interest and talents, will be encouraged to take additional course work in the departments of Mathematics, Physics, Chemistry, and Electrical Engineering.

Descriptions of graduate courses in the departments of Anatomy, Pathology, Microbiology, Biochemistry-Genetics, and Physiology and Pharmacology are listed in the *Bulletin of the Graduate School.* Students will be encouraged to select courses which are relevant to their own developing individual interests rather than according to a prescribed program which is applied to all students in a given discipline. It is our view that such range, flexibility, and freedom are the essence of graduate education. The original research and dissertation of each student will be supervised by a faculty advisor chosen by the student in consultation with the director of graduate studies in his department. The faculty advisor is the chairman of the student's supervisory committee which must consist of at least three members of the major department. This committee generally administers preliminary (before commencing original research) and final (after completion of dissertation) examinations for the student.

Terminal Year—An Elective Year in Clinical Science. The student will be assigned an advisor from the clinical department in which he is most interested. Together they would construct a highly individualized training plan for that particular student and one that would have a major emphasis relative to the chosen clinical area as well as a minor emphasis in one other field. The integration of research and clinical experience will be carried out in such a way that the student's research competence will be facilitated rather than lost. Therefore, this year will be planned with due regard to the trainee's proposed career in research. This year would give the trainees in the Medical Scientist Training Program further training in clinical medicine and would complement the second or core clinical year, so that the trainee's total clinical experience would approximate that now given in the regular clinical years of medical school (the third and fourth years in the majority of schools). It should be noted that since these students will receive the M.D. degree upon completion of this final year, great care will be taken by the faculty to insure that the student will be well grounded in the present day concepts of patient care.

Parenthetically, it is hoped that the student's last year would give the student an experience which will not be repeated later during his internship. Rather it should serve to complement these phases of his training. Ideally, the future surgeon, for example, should be exposed to fields other than surgery, since he will receive intensive training in surgery during

his residency. The student usually will be tempted to enter immediately upon the area of his primary interest, e.g., surgery. It is partially to offset this tendency that it is stipulated that a student should take a major and minor subject and that the program for the final year should be arranged through consultation by the student with his faculty advisor.

Application and Admission Procedures

1. Complete the application form for the Duke University School of Medicine.
2. Complete the application form for the Medical Scientist Training Program.
3. After preliminary screening, selected candidates will be asked to submit an application to the Graduate School.
4. A member of the Medical Scientist Training Committee will be available to furnish further information to applicants interviewed at Duke. Applicants will be notified of their status not later than January 10.

Further information can be obtained by writing to: Associate Director, Medical Scientist Training Program, Department of Biochemistry, Duke University Medical Center, Durham, North Carolina 27706.

Medical Historian Training Program

General Information

The Medical Historian Training Program is conducted under the auspices of the School of Medicine and the Graduate School and is supported by the Josiah Macy, Jr. Foundation. It is constructed to provide professionally trained medical historians to fill some of the shortages of teachers and research workers that exist in universities throughout this country, and it is intended to provide a unique training opportunity for a small number of highly selected students who anticipate careers in the fields of medicine and medical history. A minimum of six years of graduate study is required, with successful completion leading to both the Doctor of Medicine and Doctor of Philosophy degrees. It is anticipated that graduates of the program will undertake at least one year in postgraduate medical training before embarking on careers in the history of medicine. Graduates are expected to devote their major career efforts to teaching and scholarly activities in the field of the history of medicine, with minor involvement in clinical responsibilities, patient care, or biomedical laboratory research.

Eligibility

Applicants must meet the requirements for admission to both the School of Medicine as a candidate for the M.D. degree and the Graduate

School as a candidate for the Ph.D. degree in the Department of History. Applications will be accepted from candidates who wish to enter the program in the first year of medical studies.

In addition to the minimum requirements established by the School of Medicine and the Graduate School, additional course work in history and the history and philosophy of science will count heavily in the selection of candidates.

Financial Support

Students accepted will be offered a traineeship award which includes a stipend and a full tuition allowance.

The award, which will support the trainee throughout a six-year combined program as long as his progress is good, includes allowances of $500 per annum for each dependent and limited travel expenses to attend meetings in the history of medicine. Stipend levels (exclusive of allowances) begin at $2400 per year, and annual increments raise this to a maximum of $5500.

The Training Program

The program has been designed to offer the student a great latitude in the selection of his course material, but the basic requirements will be those described in the following example of a typical program. During the first two academic years, full-time courses in the School of Medicine will be followed. The first year comprises the "core" basic science year and the second, the "core" clinical science year. At the end of the second year the student enters the graduate program.

Typically, a candidate for the Ph.D. degree in history devotes approximately two full years to the completion of his required courses, work in seminars, writing a master's thesis, and in preparatory study for his preliminary or qualifying examinations. The actual length of time needed to earn the Ph.D. degree depends upon the number of months beyond this two-year period a candidate finds it necessary to devote to research and the writing of his dissertation. The candidate will pursue these studies in the Department of History during the third and fourth academic years of the program.

In the fifth and sixth years, the trainee will return to medical studies and follow the very flexible elective program offered in the third and fourth years of the curriculum of the School of Medicine. During this time a total of up to one quarter can be made available for completing the Ph.D. degree in history. Elective credit for this period will be accepted toward completing the requirements for the M.D. degree.

The original research and dissertation of each student will be supervised by a faculty advisor chosen by the student in consultation with the director of graduate studies in the Department of History. It is not

required that the faculty advisor be a member of the department in which the student will take his degree; therefore, it is possible for a student to undertake dissertation work at another institution in this country or abroad. If the personal interests or required research of the individual student demand work away from Duke for any considerable period of time, the anticipated schedule for completion of the double degree program may be somewhat extended; but it is anticipated that a total of six years will normally prove adequate.

Following the sequence described above, a candidate could complete the requirements for the A.M. degree in history by the end of the fourth academic year of the program. By the end of his sixth year, he could receive both the M.D. and Ph.D. degrees.

Students in the program will be expected to devote the summer following completion of their first year in medical school working in some aspect of the history of medicine to prepare for the regular course work in history that will begin in the third academic year of the program.

Application and Admission Procedure

1. Complete the application form for the Duke University School of Medicine.
2. After preliminary screening, selected candidates will be asked to submit an application to the Graduate School for admission to the Department of History.
3. Customarily, the selection of the trainees will be made from a group of finalists who will be interviewed at Duke University. Applicants will be notified of their status not later than January 10.
   Application forms and further information may be obtained by writing to the Associate Director, Medical Historian Training Program, Box 3005, Duke University Medical Center, Durham, North Carolina 27706.

Medical Undergraduate Special Training and Study Programs

With the objective of affording special opportunities to medical students having interests in particular areas of the biomedical sciences, a series of integrated, interdisciplinary training and study programs have been constructed. Participation in one or other of these programs is an alternative available to medical students in the third and fourth years of their studies. These programs may be supplemented with additional work taken through the medium of the departmental electives described in the section Courses of Instruction.

Resources for Study

Medical Center Library

The Medical Center Library, located in the Davison Building, attempts to provide all services and collections necessary to further educational, research, and clinical activities in the medical field. Extensive reference and bibliographical services are provided. The collection exceeds 90,000 volumes, and 1700 periodicals are received currently. Director, G. S. T. Cavanagh; Associate Director, W. Bird; C. Tatum, M. Jones, M. A. Brown, E. Wheeler, J. Woodburn, K. Kruse, P. Tavernise, M. J. Crutchfield.

The Trent Collection in the history of medicine is an unusually fine one, rich in manuscripts and rare books, and providing opportunity for study and research as well as casual reading in the field. Curator, G. S. T. Cavanagh, Assistant Curator, Susan C. Smith.

Duke Hospital

Duke Hospital is an integral part of the Medical Center and currently has 800 beds and 23 bassinets. The hospital performs the dual functions of professional education and patient care. Comprehensive diagnostic and treatment facilities are provided. Different levels of patient care are

provided, ranging from the intensive nursing unit, through the conventional nursing sections to a minimal care unit. Private, semi-private, and ward accommodations are available. Over 20,000 patients are admitted each year. The approximate daily census by service is as follows: Surgery, including the surgical subspecialties, 310, Medicine, 205; Pediatrics, 55; Psychiatry, 50; and Obstetrics-Gynecology, 50. Surgical facilities include eighteen operating rooms where over 15,000 surgical procedures are performed annually. Four obstetrical delivery rooms are maintained. Special diagnostic and treatment units are also available such as the recovery room, cardiac catheterization laboratory, and hyperbaric oxygenation chamber.

The outpatient services comprise the public clinics, the private patient clinics, the employee health office, and the emergency service. Over 250,000 visits are made each year to these units. Close working relationships between Duke Hospital and various outside health agencies enhance continued care of the patients.

The clinical faculty of the Duke University School of Medicine forms the medical staff of Duke Hospital. Thus this group not only participates in both undergraduate and graduate medical education but also in active medical practice within the hospital and the private diagnostic clinics. Duke Hospital is approved for internship and residency training by the Council on Medical Education and Hospitals of the American Medical Association and conducts an active educational program involving approximately 340 housestaff members. The hospital is fully accredited by the Joint Commission on Accreditation of Hospitals.

Veterans Hospital

The Durham Veterans Administration Hospital is located within walking distance of the School of Medicine. The full-time professional staff are all members of the faculty of Duke University School of Medicine. This 489 bed general hospital provides an opportunity for closely integrated student teaching and housestaff training.

Teaching and Research Facilities

The major preclinical teaching facilities are the Central Teaching Laboratories in the Davison Building. Additional preclinical teaching facilities are located in the Bell Building and in the Nanaline H. Duke Medical Sciences Building. Classrooms and laboratories for clinical teaching are located in hospital and clinic areas of the medical center. Extensive research facilities are located in the Davison, Clinical Research I,

Clinical Research II, Gerontology, William B. Bell, and Nanaline H. Duke Medical Sciences Buildings.

Audiovisual Education

The Division of Audiovisual Education is structured to serve the Medical Center in three ways: (1) to produce all types of audiovisual materials; (2) to inform the faculty and students concerning audiovisual materials and methods; and (3) to provide indirect and direct assistance to the faculty who wish to use audiovisual media in their teaching, research, and patient care endeavors. There are three subdivisions: the Medical Art Facility, the Medical Photography Facility, and the Central Television Facility.

The Medical Art Facility provides illustrations produced by various art methods and techniques of subjects seen or unseen and theoretical. Services rendered include: medical illustrations, schematic and mechanical drawings, diagrams, charts, graphs, designs, lettering, signs, casts, models and exhibits, and other forms of illustrations. The production of facial prostheses and instruction in the use of opaque cosmetics are performed by the Facial Prosthetics Laboratory, a subsection of Medical Art.

The Medical Photography Facility is staffed and equipped to provide all photographs needed for teaching, in research, and in the diagnosis and treatment of patients. For example, photographs of patients may include such fine details as the patterns of vessels on the retina, or those of the skin as they are revealed by infrared light. Photographs are used by the medical staff as records of the patients' responses to treatment, as well as in teaching. Surgical and other procedures are recorded in motion pictures to be used for instruction and to enhance the patient record.

The Central Television Facility provides service directed toward the instruction, research, and patient care programs of the Medical Center. The television system is designed to enhance the multimedia approach for instruction. During the past several years, a collection of videotaped material has been produced as cores for teaching presentations. The television control center is capable of interdigitation of all audio and video signals originating from TV cameras, a motion picture-opaque-slide pick-up device, and video tape recorders. Studio and mobile cameras, monitors, and the wide-screen TV projector may be used in twenty-five specific locations throughout the Medical Center. These locations include all major classrooms and student laboratories.

Although no formalized study in medical art, medical photography, and medical television is provided, individual training programs are available for those who wish to pursue a career in the medical audiovisual field. *Director S. Agnello, E. Clark, W. Williams, M. Wayda*

Student Life

Living Accommodations*

Duke University provides living accommodations for graduate-level resident students, both married and unmarried.

Rooms in residence halls, spaces in Town House Apartments, or other rental units may be reserved by single applicants only if they have been accepted by the Medical School and after the required $25 room or security deposit has been paid to the Duke University Bursar.

Assignment priority is established by the date of receipt of completed applications with deposits in the Office of the Director of Housing Management.

Residence Hall space available for single graduate and professional students totals 197 beds for men and 97 beds for women. Facilities for single graduate and professional students are located on the northern side of the campus near the Medical Center.

Town House Apartments, located between East and West campuses, include 30 two bedroom units, each furnished for three graduate women students. Two students occupy the master bedroom, the third occupies a smaller bedroom. A living room, kitchen, and one and a half baths complete these attractive living units.

For married graduate and professional students, Duke University has

*Information pertaining to residence halls and apartments is subject to change prior to September, 1969.

98 one bedroom luxury apartments under lease for a period of three years. An additional 104 two and three bedroom apartments will be under lease for one year to meet student requirements until a new Married Student Housing complex is ready for occupancy about midsummer of 1970. All units are within walking distance of the campus.

Regulations governing room and security deposits and occupancy of rooms and apartments will be provided by the Office of Housing Management at the time application forms are forwarded to accepted students. Occupants within each type of housing are expected to comply with the appropriate regulations.

Application forms and detailed information on graduate housing will be mailed when the Graduate School has notified the Office of Housing Management of official acceptance of the student. Single women may express a choice for the type of housing desired. Complete applications for rooms and apartments are to be returned, with required deposits, to the Office of Housing Management, Duke Station, Duke University, Durham, N.C. 27706.

All requests for rates and other information for apartment-type accommodations should be addressed to the Director of Housing Management, Duke University. Specific information will be supplied as available.

Dining Facilities

Several dining facilities, located near the Medical Center, are available to students in the School of Medicine.

In the Duke University Union Building, there are two cafeterias offering multiple-choice menus and a dining area, the Oak Room, which offers full meals and *á la carte* items.

In the Men's Graduate Center, there is another cafeteria with multiple-choice menus and the Coffee Lounge, where sodas and sandwiches are served from 11:30 A.M. to 11:00 P.M. (See section on Dining Facilities in chapter "Financial Information" for approximate food costs.)

Services Available

Student Advisory Program

The development of an informal and cordial student-faculty relationship is an important objective of the Duke University School of Medicine. As a means of achieving this objective, the Student Advisory Program was established.

The Student Advisory Program provides each medical student, from the time he enters as a freshman until the time he graduates as a physician, with a single faculty member whose special interest he becomes. Each

student joins with four others in constituting a group for which their "personal" faculty advisor has responsibility.

Through informal meetings, discussions, and occasional social gatherings, an atmosphere of mutual confidence and friendliness becomes established, a relationship that often extends beyond graduation and reaches far into the future.

Student Medical Care

With the exceptions to be noted, full medical, psychiatric, and surgical care is furnished to all regularly matriculated medical students of the University while they are on the University campus if they have paid the quarterly general fee. This service is under the direction of the physician-in-charge with the cooperation of the staff of the Duke University Medical Center. It includes hospitalization (limited to thirty days), professional care, drugs, dressings, X-ray studies, and ward but not special nursing. A charge for board is made at the same rate as in the University dining halls. Refraction of eyes and treatment of teeth and of all chronic and pre-existing conditions, such as diseased tonsils, hernia, elective surgery, chronic skin conditions, and endocrine disturbances, or accidents or illnesses occurring during vacations or while off the campus are not included in this service. The cost of any necessary braces and orthopaedic appliances, as well as of special nursing, must be borne by the patient. If the student has insurance providing hospitalization, surgical, or medical benefits, the benefits may be applied to the cost of his medical care.

In recognition of the unique health needs of medical students, whose activities bring them into far greater contact with communicable disease than the average university student, a special health program for medical students has been established. The program will provide for a careful physical examination, chest x-ray, blood and urine examination, and necessary immunizations at the beginning of the freshman year. In addition, chest X-rays will be repeated at appropriate intervals during the entire four years of medical school.

Since these services are in addition to those available through the Student Health Service, a special fee of $25.00 will be required of each medical student to cover the extra cost over the four-year period. *R. Portwood, Director of Student Health*

Student and Professional Organizations

Davison Society

The Davison Society is a composite of the former Student Government Association and the local chapter of the Student American Medical As-

sociation. All students in the medical center working toward the degree of Doctor of Medicine are members of the Society with membership in SAMA being optional. The Davison Society Council consists of twenty-five elected students including an executive council and individual class officers. The responsibilities of the Society include freshman orientation, continuation of the Big Brother program for freshmen, publication of the yearbook for the medical center, publication of a directory of students and a listing of research opportunities for medical students, participation in the Davison Scholar Program, and the organization of extracurricular educational and social events and serving as liason between students and faculty. With the curriculum change at Duke the Society has worked responsibly with the faculty in curriculum planning and evaluation. Another area of student concern and activity is that of the health-care delivery system in the United States.

A major responsibility of the Davison Society is the preservation of the Honor Code which has been a proud tradition at Duke University School of Medicine for many years. The prevailing opinion has been that students must act with integrity while in medical school in order to cope with the much greater demands and responsibilities of the practice of medicine. Each student on or before entering Duke University School of Medicine is required to sign a statement expressing his understanding and familiarity with the honor system and his willingness to abide by its provisions. The Davison Society serves as an Honor Council to try any infringements of the Honor Code. The Dean's committee of students, faculty, and administration serves to recommend the disposition of a student found guilty by the Honor Council.

Alpha Omega Alpha

Alpha Omega Alpha Honorary Medical Fraternity was organized nationally in 1902, and the Duke Chapter (North Carolina Alpha) was chartered in 1931. The aims of the society are the promotion of scholarship and research in medical schools, the encouragement of high standards of character and conduct among students and graduates, and the recognition of high attainment in medical science, practice, and related fields. Student members are elected from among those whose scholastic achievement places them in the upper twenty-five percent of the class and who have further demonstrated leadership and promise of future achievement. Not more than one-sixth of any class shall be elected to membership, and of these only one-third may be elected in the junior year. Alumni, faculty, and honorary membership may also be conferred upon certain physicians who have distinguished themselves in the various areas of medical teaching, research, and practice.

The Christian Medical Society

The Christian Medical Society is an organization of medical students

and graduate physicians who are interested in relating Christian faith to the practice of medicine. Meetings encourage the recognition of the spiritual and moral as well as the physical responsibilities of the physician.

Duke SAMA Chapter

Since the merger between the Student Government Association and SAMA to form the Davison Society, the local activities of the Duke SAMA Chapter no longer constitute a separate program of events. Approximately 75 percent of the medical student body hold membership in SAMA which is an independent national organization representing the opinions and desires of more than 60,000 medical students, interns, and residents throughout the country.

Local SAMA members represent Duke University School of Medicine at regional and national meetings and conventions. A summer externship program for medical students is administered by appointed members of the Duke chapter.

The organization has earned a reputation on the national level for its interest in medical education, the delivery of health care, international foreign medical student exchange programs, hospital employment, internship evaluation, and its call for reforms in many outdated aspects of American medicine. SAMA provides benefit plans for students and maintains communication with other national student professional organizations.

The Duke Chapter has always been very active in the national organization with a long list of committee chairmen, standing committeemen, and ad hoc committee members.

The Engel Society

The Engel Society is an organization composed of a small group of medical students and faculty which has as its principal objective the promotion of the exchange of ideas and experiences between students and faculty. The Society is named for the late Dr. Frank L. Engel, who devoted much of his professional life to teaching and to helping medical students at Duke find their own niche in professional life. Six dinner meetings are held each academic year. These meetings provide a forum for informal discussion and an opportunity for the members to hear papers presented on topics of general interest to those in the medical profession. The student membership consists of six members of the junior and six members of the senior medical classes. Each year six members of the rising junior class are invited to replace the six graduating seniors. Students chosen for membership possess not only the capability but the desire for scholarship in medicine in its broadest sense.

Ganglion

Ganglion, the Neuroscience Society of Duke Medical School, is one of the youngest of Duke's medical societies. Organized last year, its purpose is to bring together medical students interested in neuroscience as a career. Its members have interests in psychiatry, neurology, neurosurgery, and allied areas. Ganglion was created by a small group of students to provide a means of contact with members of Duke's neuroscience faculty, and with major figures in the field of neuroscience. Guest speakers are invited to at least six of the society's dinner meetings each year, and discussions center not only around guests' scientific interests but also their personal philosophies, opinions, and ideas outside of science.

Duke University Medical Alumni

The Duke Medical Alumni now number over 4,800. Membership includes all graduates of the Medical School, past and present faculty, and all past and present house-officers of Duke Hospital (including those who are not Duke graduates). Associate membership is held by alumni of the following: Hospital Administration, Dietetics, Social Service, Laboratory Technique, X-Ray Technology, Physical and Occupational Therapy, Medical Record Library, and Medical Art and Illustration.

Officers

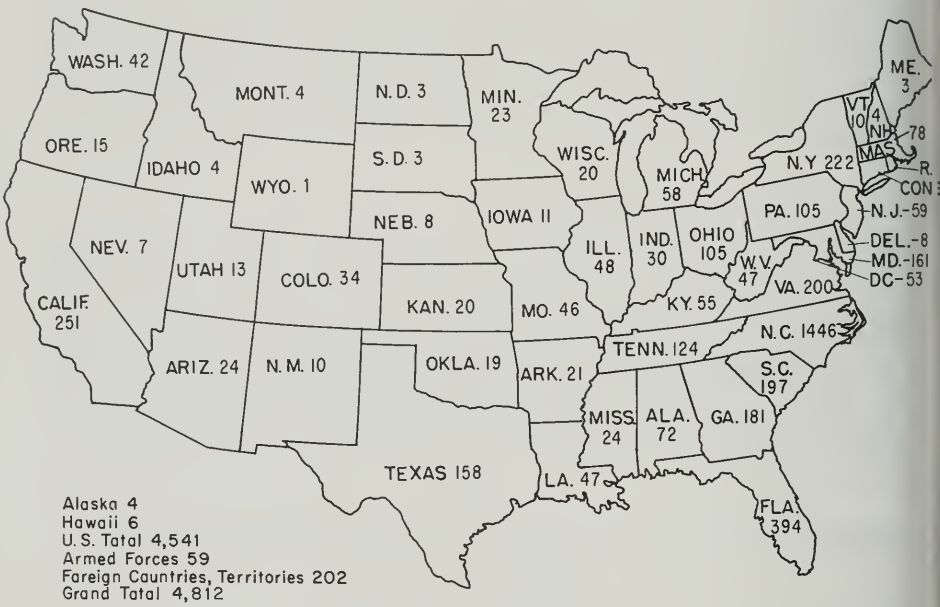
President:	Dr. John P. McGovern BSM '43, M.D. '45 6655 Travis Street Houston, Texas 77025
Vice-President:	Dr. Benjamin Vatz M.D. '45 1106 Hammel Road Greensboro, North Carolina 27408
Secretary-Treasurer:	Dr. Jay M. Arena M.D. '32 1403 Woodburn Road Durham, North Carolina 27705

A newsletter is sent to all the members in January, April, July, and October of each year. Reunions are held every year in Durham; the next is planned for November 6, 7, 8, 1969. Alumni groups have been formed in several states. Alumni luncheons or dinners are held during the following meetings: The American Medical Association, The Southern Medical Association, The North Carolina Medical Society, and the American Academy of Pediatrics.

The map shows states in which Duke Medical Alumni are located and the number in each state. Figures include those who received the M.D. degree from Duke and also those who have served a year or more on the

housestaff. A total of 4,551 physicians are distributed throughout the United States.

There are also 202 Duke Medical Alumni serving in the territories of the United States and in foreign countries, and 59 alumni are on duty in the Armed Forces.



Conduct of Students

Duke University expects and will require of all its students continuing loyal cooperation in developing and maintaining high standards of scholarship and conduct.

The University wishes to emphasize its policy that all students are subject to the rules and regulations of the University as currently in effect, or from time to time, are put into effect by the appropriate authorities of the University.

Any student, in accepting admission, indicates his willingness to subscribe to and be governed by these rules and regulations and acknowledges the right of the University to take such disciplinary action, including suspension and/or expulsion, as may be deemed appropriate, for failure to abide by such rules and regulations or for conduct adjudged unsatisfactory or detrimental to the University.

Financial Information

Fees and Expenses

Tuition and Fees

The following table represents an estimate of a student's necessary expenses for the normal academic year of the School of Medicine. The total of these figures suggests a basic minimum budget of approximately $3,000. Allowances for recreation, travel, clothing, and other miscellaneous items must be added to this estimate. These, of course, will vary considerably, depending upon the needs and tastes of the individual.

Tuition and fees	$2050.00	
Board (Cafeteria estimate)	600.00	
Room*	325.00	
		495.00
Books†	90.00	
		275.00
Medical Student Health Program‡	25.00	

*University Housing.

†Anticipated annual cost of books: first year, $275; second year, $135; third and fourth years, $90.

‡For details of this program, see page 20.

Instruments and insurance*	197.50
Student Government (Davison Society) Subscription†	10.00

A pro-rata part of the total fees is payable by the Friday preceding each applicable term. A fine of $5.00 is charged for late registration after this time. No credit will be given for any term in which the tuition has not been paid, whether the work has been done here or elsewhere.

A student is not eligible to attend classes or to make use of University facilities if he is in default of payment of monies owed to the University.

Bills for fees and tuition are rendered by the Office of the Bursar, Duke University. However, nonreceipt of a bill does not exonerate the student from payment or from assessment of fine for late registration.

It is not advisable for students to attempt outside work to defray their expenses during the academic year.‡

See section on Housing in this chapter for further information.

Living Accommodations

Housing

Rooms in residence halls are normally rented for the academic year, but for no period less than one semester or specified term. A limited number of single rooms are usually reserved for returning students.

Each student assigned to the Town House Apartments is currently charged $495.00 for the academic year on the basis of three individuals to an apartment. Utility charges are included in these rates. Rental rates for space in double residence hall rooms range from $325 to $355 for the academic year.

Current rates for apartment units for married students range from $126 per month (including utility allowances) for an unfurnished one bedroom unit to $175 per month (without utilities) for a partially furnished three bedroom unit.

No refund on residence hall room rent or the rent for spaces in Town House Apartments is made to students who withdraw after the date of registration, except for those who involuntarily withdraw to enter the armed services. Such refunds will be made in accordance with the University's established schedules.

Married Students who desire assignment to apartments will be offered

*Microscope, sphygmomanometer, ophthalmoscope, otoscope, and other equipment which are required of each student and which must conform to rigid standards may be purchased from the University by means of a Student Equipment Time Payment Plan.

†Mandatory fee.

‡Wives of medical students desiring employment may secure information from the Duke Medical Center Personnel Office or the Duke University Personnel Office.

leases for specific periods. Cancellation procedures are stipulated in the agreements.

Applications

Students officially accepted for admission to the School of Medicine will be requested to complete a housing information form to be returned to the Director of Admissions, Duke University School of Medicine, Durham, North Carolina.

On receipt of the completed forms, students will be sent appropriate literature, housing application forms, and instructions. The completed housing application forms and required $25.00 deposits must then be sent to the Director of Housing Management, Duke University, Durham, North Carolina.

Confirmation of room and apartment assignments will be forwarded to the applicants as soon as practical, usually about one month before occupancy. (See section on Housing Deposit and Refund on page 28.)

Residence Hall and Town House Apartment Regulations

Rooms and apartments are rented for the academic year. Room and apartment rentals for less than one term require special arrangements.

A resident student in order to retain his room or apartment for the succeeding academic year must make application at the Office of the Housing Bureau for confirmation of his reservation.

No refund of room or apartment rent for a specified medical term will be made after the day of registration for that term except for students who involuntarily withdraw to enter the armed services. Such refunds will be made in accordance with the University's established schedule. Students desiring to cancel a residence hall reservation must provide written notice to the Office of Housing Management by August 1 for cancellation of a reservation for the fall semester and not later than ten days prior to the beginning of any subsequent medical term for a cancellation of a reservation for the next medical term. Such notice is essential to obtain refund of both room rent and the $25.00 room deposit. Refer to Medical School Calendar for details on dates of specified terms for each class.

The authorities of the University do not assume responsibility for persons selected as roommates, and each student is urged to select his roommate when reserving a room or apartment. Any student who occupies a double room without a roommate will be given written notice from the Housing Office to obtain a roommate or he may be required to pay the rental consideration for the whole room or apartment. Similar notification will be sent to occupants of apartments where vacancies occur.

Regulations governing the occupancy of rooms or apartments will be

supplied by the Office of Housing Management to those students who make application for housing. Occupants are expected to abide by these regulations.

Any exchange of rooms or apartments must be made at the Office of Housing Management. Persons who exchange rooms or apartments without the approval of the Office of Housing Management will be subject to the charge for both apartment spaces.

Housing Deposit and Refund. A $25.00 deposit is required of each applicant before a housing reservation is made. This initial deposit serves as a continuing deposit for successive terms.

Refunds. The room deposit will be refunded under the following conditions:

1. Within thirty days after the student has been graduated.
2. Upon withdrawal from the University residence halls by students enrolled on the semester basis, provided written notice is received by the Office of Housing Management by August 1, for cancellation of a reservation for the fall semester, and not later than January 15, for the spring semester.
3. Upon withdrawal from the University residence halls by students enrolled on the basis of the medical term, provided written notice is received by the Office of Housing Management by August 1, for cancellation of a reservation for the term beginning in September, and not later than ten (10) days prior to the beginning of any subsequent medical term within the academic year.

The deposit required for apartments operated by Duke University is refunded under similar circumstances; however, apartments are rented on a lease basis.

No refund will be made until the occupant has checked out of his room or apartment through the Office of Housing Management and has settled his account with the Bursar.

Dining Facilities

If a student dines on the Duke University campuses, the cost of food for the academic year will average approximately $600.00; however, this will vary depending upon the tastes of the individual.

The prices of food are the same in each of the University-operated dining facilities.

Motor Vehicle Registration

Each motor vehicle operated on the Duke University campuses by students enrolled in the School of Medicine must be registered at 08 Social

Science Building within five calendar days after operation on the campuses begins, and thereafter must display the proper registration emblem.

Resident students must pay an annual parking fee of $30.00 for each motor vehicle or $10.00 for each motorcycle, motorbike, or motor scooter.

To register a vehicle, the student must present the following documents: (1) State vehicle registration certificate; (2) valid driver's license; and (3) satisfactory evidence of automobile liability insurance as required by North Carolina law—$10,000 per person, $20,000 per accident for personal injuries, and $5,000 property damage.

Parking, traffic, and safety regulations will be given each student who registers his vehicle. Students are expected to abide by these regulations.

Financial Aid

Duke University School of Medicine makes financial assistance available to students in the form of scholarships, small loan funds, U.S. Health Professions Student Loans, summer work-study employment, fellowships, and cash awards. Assistance is granted on the basis of merit, demonstrated financial need, or a combination of both.

Financial Assistance to Incoming Freshmen

All applicants for admission to the School of Medicine are considered for four year scholarships. Application forms are mailed to accepted students by the Office of Admissions.

Financial Assistance to Upperclassmen

Should a medical student experience unforseen financial difficulties while he is in school he may seek assistance through the Office of Medical Students' Loans and Scholarships. Scholarships are not generally awarded upperclassmen until the applicant has incurred considerable educational indebtedness.

Scholarships—Fellowships

Where not stated, specific information concerning these may be obtained from the Office of the Coordinator of Medical Students' Loans and Scholarships.

The Avalon Foundation Scholarships are non-refundable grants assigned on the basis of financial need and scholastic attainment.

The Mary Duke Biddle Foundation Scholarships are awarded to academically distinguished medical students who need financial assistance. A scholarship may cover up to full tuition costs.

The Thomas C. Bost Foundation Scholarship is assigned on the basi of merit and need in an amount equal to tuition.

The Medical Faculty Wives Scholarship is awarded to a worthy studen for four years in the amount of $1000 per year.

The Pfizer Scholarship, offered by Pfizer Laboratories, a division o Charles Pfizer & Co., Inc., is an award of $1000 granted to a studen selected on the basis of merit and need.

The Charles Alva Strickland Memorial Fund Scholarships may cove up to full tuition costs. This scholarship is renewed for each year afte the first year. Merit and need are taken into consideration.

U. S. Public Health Scholarships are available to U. S. citizens wh cannot pursue the required studies without such aid. Demonstrate financial need is required in order to be considered for this scholarship u to $2500.

The Dr. Hillory M. Wilder Scholarship Fund covers full tuition fo each of four years and is awarded on the basis of merit and need.

The Francis and Elizabeth Swett Scholarships are awarded to enterin students on the basis of outstanding need and merit. The scholarship are awarded on a one-year basis, renewable if funds permit or if nee still exists and academic excellence is maintained.

Student Research Fellowships are available as part of a prograr designed to encourage the medical student to participate in researcl Summer fellowships carry a stipend of $200.00 per month. These fellow ships enable selected students, after completion of their first year, t participate in research during a summer vacation or other free time Special fellowships in nutrition, ophthalmology, allergy, and other field are also available. Opportunities also exist for a student to engage i research for an entire year during which time he temporarily discontinue his medical course. These post-sophomore research fellowships carry stipend of $3,200 per year plus an allowance for dependents and tuitio expenses. In special circumstances these fellowships are tenable at inst tutions other than Duke Medical Center and outside the United State Information may be obtained from the Associate Dean for Undergraduat Medical Education.

Student Awards and Research Fellowships

The Wilbur C. Davison Scholarship Award. This award was institute to enable a medical student to widen his experience through clinic study outside of the United States. One award of $500 is made each yea Information may be obtained from the Associate Dean for Undergraduat Medical Education.

The Trent Prize in the History of Medicine. The Trent Prize was e tablished by Mrs. Mary Trent Semans in memory of the late Dr. Josia C. Trent to encourage students to undertake independent work in th

history of medicine and to utilize the resources of the Trent Collection.

An annual award of $100.00 is offered for the best essay by a Duke medical student on any topic in the history of medical and allied sciences. An additional book award will be made to each entry of merit. Students are invited to discuss possible topics with the Curators of the Trent Collection. Finished papers must be submitted to Mr. G. S. T. Cavanagh, Medical Center Library, by October 31 of each year.

Lange Medical Publications Awards. Textbooks and certificates are awarded to the Senior Class Valedictorian and the top ranking woman graduate. Textbooks are also awarded to the top two students in each of the upper three classes and to the president and representatives of the first year class.

C. V. Mosby Awards. Gift certificates for the purchase of books are awarded annually to five top students in the graduating class.

American Medical Women's Association Awards. An award of $100.00 and a citation are presented to the woman medical student who graduates at the top of her class. An Honorable Mention citation is presented to all women students who graduate within the top ten per cent of their class.

Smith Kline & French Award for Medical Writing. An award of $100.00 is made annually to the medical student who submits the most meritorious essay describing a piece of research. The paper must show that particular attention has been given to clarity of writing, definition of objectives, presentation of results, and bibliography in correct form. Papers must be submitted to the Associate Dean for Undergraduate Medical Education before November 30 of each year.

Merck Manual Awards. A copy of the *Merck Manual* is presented annually to past presidents of the Student Government Association and the Duke Chapter of the Student American Medical Association to recognize their contribution to the life of medical students at Duke University School of Medicine.

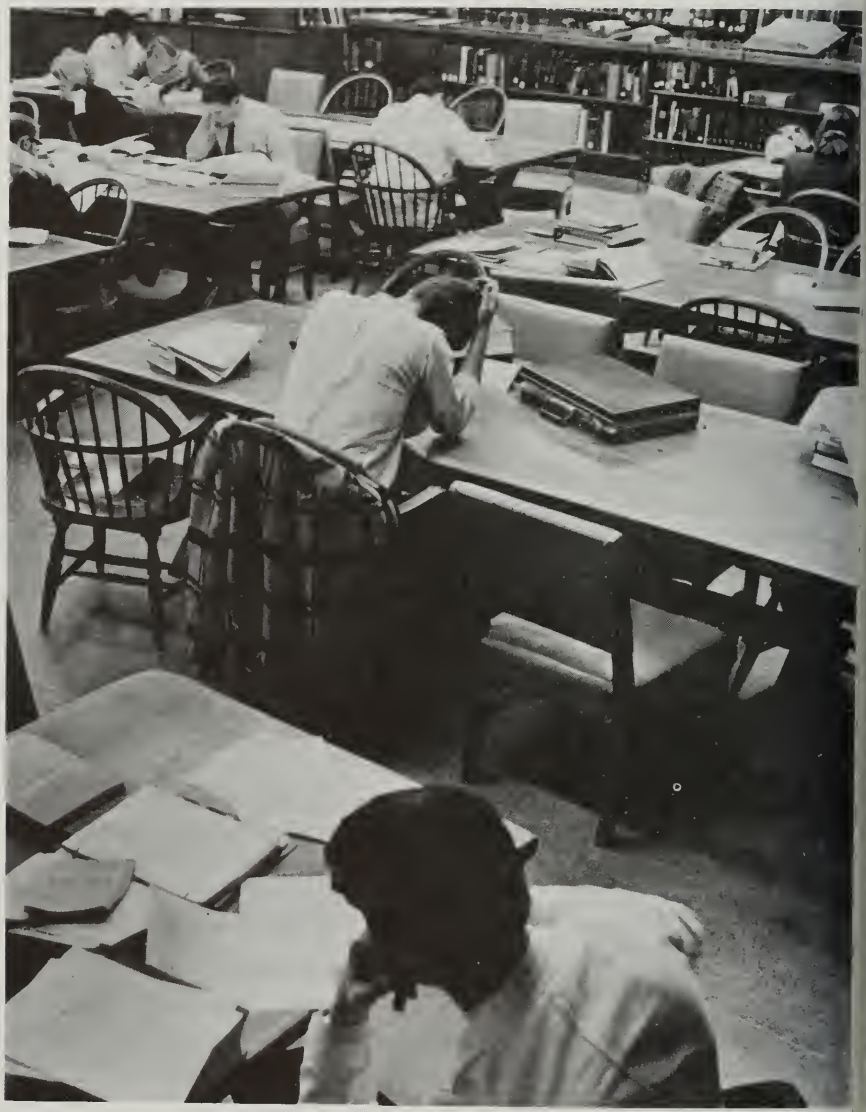
Roche Award. A gold engraved wrist watch and certificate is presented annually to the graduating senior who has achieved the highest academic performance throughout four years of medical school at Duke University School of Medicine.

Roche Medical Book Program. Each member of the senior class is sent a certificate that permits him to receive a medical textbook of his selection.

Duke University School of Medicine Awards. The past presidents of the Student Government Association and the Duke Chapter of the Student American Medical Association receive a book award in recognition of their contributions to student life.

The "Thomas Jefferson" Award. This award is made periodically to recognize outstanding achievement in fields outside those of medicine and science. The purpose is to identify individuals who have a broad range of talents and who have contributed materially to the life of the University as a whole.

The Upjohn Award in Community Medicine. This is an award of $200.00 given to a Duke student for the best essay discussing some aspect of the social, cultural, economic, and other parameters of health. The paper should incorporate personal experiences. There is no limitation on length. Applicants should submit their papers by November 30 of each year to Dr. William DeMaria or Dr. E. Croft Long.



Admission

Intelligence, character, and integrity are the essential qualifications for admission.

A premedical student should be aware of the importance of a well-rounded general education as a preparation for the study of medicine and not limit himself to scientific courses. The Admissions Committee believes that the manner in which the college years are utilized is of greater importance than the specific subjects taken. The premedical student would be better advised to secure a knowledge of the principles and a thorough appreciation of the interrelations of the basic sciences than to accumulate credits in many courses. He should learn how to work independently, to observe critically, and to analyze rather than merely to store the information presented. Good study habits and use of time are perhaps the most important tools a student can bring to the study of medicine. His choice of studies beyond those required for admission should be governed by his own chief interests and by the intellectual stimulus to be derived from the work.

Application for Admission

Application forms may be obtained by writing to the Committee on Admissions, Box 3710, Duke Hospital, Durham, N. C., 27706. Please do not send a request before August 1. Formal applications will be accepted by the Committee on Admissions only between August 1 and December 1.

Requirements for Admission

A minimum of ninety semester hours of approved college credit is necessary for admission to the School of Medicine. These must include:

One year of college English which must consist primarily of expository English composition.
One year of inorganic chemistry.
One year of organic chemistry.
One year of physics.
One year of biology and/or zoology.
One year of calculus.

All science requirements must be completed not more than seven years prior to entrance.

Medical College Admission Test is required of all applicants. It is administered by the Psychological Corporation, 304 E. 45th St., New York, New York. This test is given at many of the colleges throughout the country in May and October of each year. Arrangements for taking this test should be made by the student through his premedical advisor. It is recommended that applicants perform this test in May of the year they plan to fill out applications.

Selection

Selection is made between September 15 and March 15 for the student entering the following September. The data on each candidate are carefully screened by the Committee on Admissions. A personal interview will be arranged for those with satisfactory credentials. If the distance from Durham is permissible the interview is conducted here; otherwise candidates are referred to our Regional Representatives. Many factors are evaluated by the Committee in the selection process. Those students who show the most promise for exceptional performance in their future practice of medicine are admitted. The candidate is notified as soon as possible whether or not he has been accepted. If he has been accepted, it is necessary for him to send a deposit of $50 by the succeeding March 1 in order to insure enrollment. This deposit is applied toward tuition and is refundable upon withdrawal prior to March 1. Inasmuch as admission must be offered a considerable period in advance of matriculation, the admission must be provisional upon the successful completion of the remaining college work.

Applications for Transfer

Applicants who have completed two years in most of the American and Canadian schools will be considered for transfer only as space permits. Such transfer students would be required to complete the second and fourth year of our curriculum. For transfer, successful completion of Part I of the National Board Examination is required as evidence of satisfactory accomplishment in the subjects taught in the first two years of most North American schools.

A limited number of transfer students from foreign medical schools may be admitted each year. Such students should have completed their preclinical training and will be required to take Part I of the National Board Examination. If space permits, these students will be admitted to our sophomore clinical rotation and be required to complete the junior and senior years, composed of electives in the clinical and preclinical areas. By attending two summer sessions a transfer student from a foreign medical school can earn his M.D. degree from Duke University approximately two and one half years after matriculation.

Requests for transfer application materials must be made by January 15 of the year of anticipated transfer. The deadline for the receipt of completed applications is March 15 of the same year. Competitive applicants will be sponsored for Part I of the National Board Examinations to be given in June of that year as part of the evaluation procedure. Upon receipt of the results of this examination, personal interviews will be arranged for those with satisfactory credentials.

Transfers into the freshman or senior year are not permitted.

Advanced Placement for Entering Freshman

Advanced placement will be offered on an optional basis to qualified students for the following first semester courses: anatomy, biochemistry, and physiology. Those students who wish to be considered for advanced placement must take examinations in these subjects for which they want consideration. These examinations will be scheduled during the first week of medical school. Students who are granted and accept advanced placement for a given course will not have to take that first semester course. However, they will be responsible to the departmental chairman and will have to work out mutually agreeable substitute activities.

Students who have successfully completed the Ph.D. in the biomedical or preclinical sciences may apply for a three-year program leading to the M.D. degree, consisting of the freshman "core" year followed by the sophomore clinical rotation and senior clinical electives.

Summary for Applicants

Years of College work required	Three
Nonrefundable application fee	10.00
Deposit required on or before March 1, 1970, from accepted applicant	50.00
Medical College Admission Test required	Yes
Size of 1969-70 first year class	86
File application for admission between	August 1, 1969 December 1, 1969
Notification of action on application between	October 1, 1968 March 15, 1970
Date entering class starts school	September 1, 1970

Regional Representatives of the Committee on Admissions

Alabama: *Birmingham*, Ben V. Branscomb
Alaska: *Anchorage*, Milo H. Fritz
Arizona: *Phoenix*, Stanley Karansky
Arkansas: *Little Rock*, Rosalind Smith Abernathy
California: *Berkeley*, H. I. Harvey; *Davis*, Robert S. Stempfel, Jr.; *Los Angeles*, Joseph A. Conroy, Douglas F. Smiley; *Menlo Park*, Gustave Freeman; *Palo Alto*, Leon Cohen, James B. Golden; *Pasadena*, Robert H. Pudenz; *San Francisco*, John E. Cann, R. Gray Patton; *San Mateo*, Lester H. Margolis; *West Covina*, Jeremiah W. Kerner; *West Los Angeles*, James L. Scott
Canada: *Montreal*, J. E. Gibbons; *Toronto*, John B. Armstrong
Colorado: *Colorado Springs*, Donald D. Borders; *Denver*, F. Vernon Altvater, Howard T. Horsley, Jr., John Ray Pryor, Fred W. Schoonmaker
Connecticut: *Hartford*, William H. Glass; *New Haven*, Clarence D. Davis, Saul A. Frankel, Joseph Mignone, Ned M. Shutkin, *Old Saybrook*, John R. Egan
District of Columbia: Louis Spekter
Florida: *Gainesville*, Lamar Roberts, Joseph W. Shands, Jr.; *Jacksonville*, David W. Brooks, Jr.; *Lakeland*, Charles Larsen, Jr., John Verner, Jr.; *Miami*, James J. Hutson, David H. Reynolds; *South Miami*, Stanley J. Cannon; *St. Petersburg*, David S. Hubbell; *Tampa*, Richard G. Connar
Georgia: *Atlanta*, James C. Crutcher, E. B. Dunlap
Germany: *Berlin*, Otto H. Gauer
Hawaii: *Honolulu*, Richard K. Blaisdell, James G. Harrison, Jr.

Idaho: *Boise*, William L. Venning; *Idaho Falls*, Reid H. Anderson
Illinois: *Chicago*, Ruth K. Freinkel, George H. Gardner, Daniel J. Pachman, Theodore B. Schwartz; *Evanston*, Donald R. Mundie, Milton Weinberg, Jr.; *Monmouth*, Kenneth E. Ambrose
Indiana: *Indianapolis*, Norman H. Bell, John D. Graham, Joseph C. Ross
Iowa: *Davenport*, Alexander W. Boone; *Des Moines*, Charles W. Latchem; *Sioux City*, Havner H. Parish, Jr.
Kansas: *Kansas City*, Wilkes O. Hiatt, Jr., Ralph H. Major; *Salina*, Roy B. Coffey; *Wichita*, Thomas Jager
Kentucky: *Lexington*, Kearns R. Thompson; *Louisville*, Billy Franklin Andrews, Georga Uhde
Louisiana: *New Orleans*, Richard H. Corales, Jr., Norbert Enzer, Harold M. Horack, Richard M. Paddison, Philip H. Jones
Maine: *Portland*, E. Charles Kunkle
Maryland: *Baltimore*, John T. King, C. Edward Leach; *Towson*, William C. Battle
Massachusetts: *Boston*, Raymond D. Adams, James H. Currens, Ellison C. Pierce, Jr., James L. Tullis, R. Lewis Wright, David Michael Young, James H. Austin, Dorothy A. Elias; *Springfield*, George A. Sotirion
Michigan: *Ann Arbor*, George E. Bacon, Lamar J. Hankamp, Muriel Meyers, Donald L. Rucknagel; *Detroit*, Robert F. Kandel; *Port Huron*, William T. Davison
Minnesota: *Minneapolis*, Lewis W. Wannamaker; *Rochester*, Richard E. Symmonds
Missouri: *Columbia*, John T. Logue; *St. Louis*, Thomas B. Ferguson
Nebraska: *Beatrice*, R. Brown
New Hampshire: *Hanover*, George Margolis, R. J. Vanderlinde
New Jersey: *Montclair*, Benjamin B. Burrill; *New Brunswick*, Gordon Benson, William E. McGough
New Mexico: *Albuquerque*, Robert Proper; *Artesia*, C. Pardue Bunch
New York: *Albany*, Stuart Bondurant, Frank M. Woolsey, Jr., *Buffalo*, Oliver J. Bateman; *Endicott*, James K. Tompkins; *Hornell*, Gordon Stenhouse; *Ithaca*, John G. Maines; *Lockport*, Frank H. Crosby; *New York*, Elaine Eyster, Jules Hirsch, Eugene L. Horger, Julia M. Jones, Michael J. Lepore, J. William Littler, Richard A. Ruskin, Leonard H. Schuyler, Robert A. Shimm; *Pittsford*, Rufus S. Bynum; *Rochester*, William L. Sutton; *Syracuse*, Alfred S. Berne, Herbert Lourie, James E. Sheehy
Ohio: *Cincinnati*, Murray B. Sheldon, Jr.; *Cleveland Heights*, Robert B. Kubek; *Columbus*, Robert J. Atwell, Charles A. Doan, Lucy R. Freedy, George W. Paulson, James V. Warren; *Dayton*, Stuart R. Ducker; *Elyria*, William L. Hassler; *Toledo*, William A. Phillips
Oklahoma: *Tulsa*, Gerald E. Cronk
Oregon: *Portland*, Richard R. Carter, Joseph F. Paquet
Pennsylvania: *Bethlehem*, Ralph K. Shields, James G. Whildin; *Bryn*

Mawr, John V. Blady; *Doylestown*, Zachary A. Simpson, *Harrisburg*, Earl S. Moyer, Alfred J. Sherman; *Johnstown*, W. Frederick Mayer; *Philadelphia*, Max W. Fischbach, Doris A. Howell, Alfred M. Sellers; *Pittsburgh*, H. V. Murdaugh, Jr., Jack D. Myers; *Scranton*, Louis C. Waller; *Williamsport*, William R. Brink

Puerto Rico: *Santurce*, Kenneth B. Brown, Rafael Hernandes-Saldana

Rhode Island: *Providence*, Richard P. Sexton

South Carolina: *Charleston*, Edward F. Parker, J. I. Waring; *Columbia*, Ben N. Miller, James M. Timmons; *Greenville*, Raymond C. Ramage

Tennessee: *Chattanooga*, Richard Van Fletcher; *Memphis*, William L. Byrne, Jack Greenfield, Ralphael E. Semmes; *Nashville*, Walter G. Gobbel, Jr., Alexander C. McLeod, Greer Ricketson; *Sewanee*, Henry T. Kirby-Smith

Texas: *Austin*, Francis A. Morris, Jr.; *Dallas*, Reuben H. Adams, W. Crockett Chears, Jr., A. James Gill; *Fort Worth*, Henry L. Burks; *Galveston*, R. H. Rigdon; *Houston*, Elizabeth Balas Powell, H. Grant Taylor; *Midland*, Dorothy B. Wyvell; *San Antonio*, Robert H. Barnes, Royall M. Calder; *Temple*, E. Clinton Texter, Jr.

Utah: *Salt Lake City*, Andrew Deiss

Vermont: *Burlington*, Edward S. Horton

Virginia: *Charlottesville*, Henry B. Mulholland; *Waynesboro*, Thomas L. Gorsuch

Washington: *Seattle*, A. Lawrence Banks, William A. MacColl, Lois Hale Watts

West Virginia: *Charleston*, Harold H. Kuhn

Wisconsin: *La Crosse*, C. Norman Shealy; *Milwaukee*, Ramon L. Lange, Jack L. Teasley



Courses of Instruction

(See listing of Faculty, Staff, and House Staff beginning on page xvii.)
Note: An asterisk placed before the course number (*ANA-206B) indicates that the course follows the timetable of the Graduate School.

Anatomy

Professor J. D. Robertson, *Chairman*; Professors J. Buettner-Janusch, J. Everett, J. Markee, M. Moses, T. Peele; Associate Professors R. Becker, W. Cuyler, K. Duke; Assistant Professors C. Christian, W. Longley, M. Mahaley, J. H. Prost; Associates F. Bassett, S. Counce-Nicklas; Visiting Lecturer, C. Doggenweiler

Required Course

The core course of instruction in Human Anatomy (ANA-200) will constitute about 253 hours during the first 18 weeks of the first year. The gross anatomy of the head, neck, and trunk will be studied during the first 11 weeks, histology during the first 13 weeks, and neuroanatomy during the 15th through 18th week. The gross anatomy of the back, pectoral and pelvic girdles, and the limbs will be studied during the 12th through 14th week. All of the above will be integrated with the other material studied during the first year. Emphasis will be placed upon the study of the material in the laboratory. In an attempt to utilize more fully the laboratory time, audiovisual education methods will be employed as fully as

possible. These techniques will consist of color motion pictures of demonstration dissections, closed-circuit television, color lantern slides, and motion pictures. All of the instruction is designed to be as informal and as nearly individual as possible. General principles and the functional viewpoint of living anatomy will be stressed in the hope that the student may be stimulated to secure a working knowledge of anatomy in the broadest sense. Whenever possible, fresh tissues and living cells will be made available for examination. Patients exemplifying anatomical principles will be presented, some within the classroom, others over live television, and others prerecorded on videotape for later presentation at the appropriate time in the students' learning experience.

In gross anatomy all of the students will dissect the important structures in certain areas of the body, namely, within the neck, thorax, abdomen, and pelvis. In other regions the students will do little or no dissection but will instead view prosections as well as prerecorded television programs and motion pictures. The regions that will be presented in this manner include the back, the pectoral and pelvic girdles, the limbs, and the interior of the cranium, including the gross anatomy of the ear, orbit, oral and nasal passages, and paranasal sinuses. The general principles of programmed learning will be utilized even more extensively than in the past few years.

In microscopic anatomy the students will be introduced to electron-microscopy, polarization optical, and X-ray diffraction methods for studying problems of biological structure. The teaching will be focused on the cell, its generalized structural and functional organization to the molecular level, and its differentiation in various organs and tissues. The students will be introduced to biochemical cytology and to biophysical cytology and cytological genetics. The structure of unit membranes will be considered in detail.

In neuroanatomy the students will be introduced to neurocytology, nerve cells, and glia. The major part of the course will deal with: (*a*) the spinal cord, including the ascending, descending, and associative tracts; (*b*) the brain, brain stem, and cranial nerves three through twelve; (*c*) the autonomic nervous system; (*d*) the cerebellum, brain stem, and reticular formation; (*e*) the thalamus and hypothalamus; (*f*) the cerebral cortex, including its structure and blood supply and primary pathways; and (*g*) the somatic sensory and the motor systems, as well as the visual, auditory, olfactory, and limbic systems. There will also be clinical neurology with presentations of suitable patients.

The students will spend about 111 hours in gross anatomy, about 78 hours in microscopic anatomy, and about 64 hours in neuroanatomy.

Elective Courses

°**ANA-206(B).** ***Anatomy of Back and Extremities.*** Complete dissection

of back and extremities, including pectoral and pelvic girdles. Visual aids will be used extensively. Course planned for orthopaedics, general practice, or neurosurgery. Weight: 3. Term 3: Jan.-March. *Markee and Bassett*

ANA-208(B).** ***Anatomy of the Trunk. Emphasis will be on the anatomy of the thoracic, abdominal, and pelvic organs and their blood supply, innervations, and the relationship between them. The dissections will be augmented by use of prosections, motion pictures, and prerecorded television presentations. Course is planned for general practitioners and specialists in surgery and internal medicine. Weight: 2. Term 3: Jan.-March. *Markee and Duke*

ANA-216(B).** ***Anatomy of the Head. Course deals with: (*a*) the interior of the cranium and the ear, eye, and orbital contents; (*b*) deeper structures of the head, including the brain and its blood supply; and (*c*) the nasal and orbital cavities, the pharynx, and paranasal sinuses. This course is planned for general practitioners, neurosurgeons, clinical neurologists, opthalmologists, and otolaryngologists. Visual aids will be used extensively. Weight: 2. Term 4: April-May. *Markee and Everett*

ANA-220(B).** ***Dissection of Restricted Regions. This course is designed with a special interest in gross anatomy. For example, the heart and its anatomical characteristics and relationships or in some other region. This course will be planned for the individual needs of the group of students requesting the course. Visual aids will be used extensively. Weight: 3. Term 4: April-May. *Markee and Duke*

ANA-230(B). ***Advanced Neuroanatomy of Motor Mechanisms.*** The course will involve consideration of classic and modern concepts of organization of somatic and visceral motor systems. Pyramidal, extrapyramidal (including cerebellar), and limbic-hypothalamic neural mechanisms will be stressed. Weight: 2. Term 4: April-May. *Peele*

ANA-231(B).** ***Physical Anthropology. Survey of major developments of physical anthropology. Human evolution, primate phylogeny, paleontology of man and other primates, primate biochemical genetics, primate behavior, and human variation (genetic and somatic) are the principal topics of the course. Weight: 1½ per 9 weeks. Terms 1 and 2: Sept.-Jan. *Buettner-Janusch*

ANA-232(B).** ***Human Genetics. Particular emphasis upon the uniqueness of studies in human genetics, human biochemical genetics, and human population genetics. Weight: 1½ per 9 weeks. Terms 3 and 4: Jan.-May. *Buettner-Janusch*

ANA-236(B).** ***Advanced Neuroanatomy of Sensory Mechanisms. The course will involve consideration of classic and modern concepts of organization of somatic and special sensory systems. Thalamic and thalamocortical interrelations will be emphasized. Weight: 2. Term 3: Jan.-March. *Peele*

ANA-237(B). ***Neuroendocrinology.*** Lectures and conferences on such

subjects as the neuroanatomy and neurophysiology of the limbic system and hypothalamus, the neurovascular linkage to the pituitary gland, neurosecretion, "releasing factors," selective regulation of pituitary hormone secretion, and feedback action of target organ secretions on the brain and the pituitary glands. Weight: ½ per 9 weeks. Terms 3 and 4: Jan.-May. *Everett*

ANA-238(B). ***Evolutionary Biology and Medical Science.*** The impact of evolutionary biology and theory on medical science and medical research. A survey of the basic literature of evolutionary biology. Principles of taxonomy, the species concept, population structure, and population genetics are studied as they apply to problems of medicine and medical research. Weight: 3. Term 4: April-May. *Buettner-Janusch and Prost*

ANA-244(B).** ***Topics in Cell Structure and Function. Advanced discussions of selected problems such as chromosome structure, mitosis, and cytological aspects of inheritance and development. Weight: 1½ per 9 weeks. Terms 3 and 4: Jan.-May. *Moses and Nicklas*

ANA-256(B). ***Surgical Neuroanatomy.*** This course will utilize gross brain and spinal cord specimens, the skull, angiograms, X-rays, pneumoencephalograms, and myelograms to correlate neurosurgical diseases and procedures with regional nuclei and tracts of the nervous system. Weight: 1. Terms 2 or 4: Nov.- Jan., April-May. *Mahaley*

ANA-340(B).** ***Tutorial in Advanced Anatomy. Selected topics will be chosen for intensive reading and discussion. Topics may be chosen related to basic problems of cytology, growth and development, biophysics, endocrinological control, neuroanatomy, physiological differentiation, and evolutionary origins of functional micro-systems. Weight: 1½ per 9 weeks, 3 per 18 weeks. Terms 3 and 4: Jan.-May. *Robertson, Becker, Buettner-Janusch, Duke, Everett, Franzini-Armstrong, Longley, Moses, and Peele*

ANA-354(B).** ***Research Techniques in Anatomy. A preceptorial course in various research methods in anatomy. An interested student might engage in research in anthropology, electron microscopy, developmental biology, fetal physiology, and stereotactic approaches to neuroendocrinology and neuroanatomy. Approval of the student by the faculty is required. Weight: 8. Term: Summer. *Becker, Buettner-Janusch, Counce, Duke, Everett, Moses, Peele, and Robertson*

ANA-382(B).** ***Topics in Developmental Biology. A review of recent advances in the field. Special emphasis will be placed upon events at the cellular level during fertilization, morphogenesis, and cell differentiation. These topics will also be considered as they relate to developmental abnormalities. Weight: 1 per 9 weeks. Terms 3 and 4: Jan.-March, Jan.-May. *Counce*

Behavioral Sciences Study Program

The Behavioral Sciences Study Program (BSP-201B) is designed to enable a student to obtain an understanding of the basic processes underlying human behavior. This will involve a year long intensive experience designed to familiarize the medical student with significant issues in the behavioral sciences and the methodology used to investigate such issues. An extensive period of study with one of the faculty will be an important component.

The Behavioral Sciences Study Program will also enable the student to obtain an understanding of the characteristics of group and community activity. To enable the student electing a behavioral sciences program to have an intensive and meaningful experience, he will be asked to focus on one of two major subdivisions. One such subdivision will be concentrated on processes which take place primarily within the individual organism. The faculty of this subgroup is oriented toward biological and experimental psychology including central nervous system effects on behavior, ANS response to stress and behavioral correlates, and learning and conditioning as well as perception and ethnology.

For those students wishing to focus their interests on interpersonal or group behavior, a second subdivision will include studies of personality and motivation, family structure, small group behavior, and community and social organization, including population and demographic studies. Students' activities will be in three major areas: one, a weekly seminar with a limited number of faculty; second, an individual tutorial, each student to work with a faculty person in laboratory or library investigation; and three, up to two graduate or medical school courses may be undertaken as determined by the student and his preceptor. Weight: 9 per 9 weeks. Terms 1, 2, 3, and 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Eisdorfer, Feather, and Back*

Biochemistry

Professor P. Handler, *Chairman*; Professors M. Bernheim, S. Gross, W. Guild, R. Hill, H. Kamin, K. McCarty, C. Tanford, S. Wakil; Associate Professors I. Fridovich, J. Harris, J. Kanfer, B. Kaufman, N. Kirshner, W. Lynn; Assistant Professors R. Greene, D. Hall, P. Harriman, J. Joshi, K. V. Rajagopalan, H. Sage, L. Siegel, R. Wheat; Associates R. Habig, Y. Nozaki, P. Holloway

Technical Associate L. Daniels; *Fellows* L. Arqueros, I. Björk, D. Calbreath, F. Castellino, M. Coughlan, R. Ferris, W. Fish, C. Holloway, V. Joshi, A. Kirshner, K. Mann, P. Mattock, H. Schulz, B. Sedgwick, D. Straub, J. Sullivan, A. Swindell, I. Trayer, O. Viveros, G. Weeks, K. Wong

Required Course

The required course in Biochemistry (BCH-200) for first year students is given over a period of eighteen weeks in the first term. The first phase is devoted to a survey of the chemistry of the materials fundamental to all life, proteins, fats, and carbohydrates, and the nature of enzymatic action. This is followed by consideration of those events in intermediary metabolism common to the life of all mammalian cells. The special metabolism of muscle, kidney, bone, erythrocytes, liver, and connective tissue and the chemical aspects of digestion, respiration, electrolyte, acid-base, and fluid balance are presented with relation to the study of the physiology of the organs so as to facilitate integration and correlation of the two disciplines.

The required course in Genetics (BCH-204) for first year students is given over a period of eleven weeks in the second term. The course emphasizes heavily fundamental aspects of gene structure, function, recombination, selection, and the organization of the genetic material. The primary objective of the course is to provide the basic information and concepts necessary for an appreciation of the origin and consequences of genetic variability.

Elective Courses

*BCH-203(B). ***Chemistry of Natural Products.*** This course will emphasize the organic chemistry of carbohydrates, lipids, and steroids, and will include discussion of other complex organic molecules. Aspects of stereochemistry, conformational analysis, and physical methods of structural investigation will be discussed. Weight: 2 per 18 weeks. Terms 1 and 2: Sept.-Jan. *Kaufman and Kanfer*

*BCH-250(B). ***Biochemistry of Development.*** Current concepts on control mechanisms in embryonic development and differentiation discussed at the cellular, biochemical, and molecular level. Weight: 1 per 18 weeks. Terms 3 and 4: Jan.-May. *McCarty and J. Harris*

*BCH-303(B). ***Macromolecules.*** The structures of biological macromolecules and their relations to biological functions. The emphasis is on proteins and enzymes. Weight: 4 per 18 weeks. Terms 1 and 2: Sept.-Jan. *Tanford and Hill*

*BCH-308(B). ***Metabolism.*** A lecture and conference course on the chemical transformations of biological compounds, emphasizing energy productions and utilization, the mechanisms of the enzymes involved, and the control of metabolic pathways. Weight: 5 per 18 weeks. Terms 3 and 4: Jan.-May. *Kamin and Staff*

BCH-312(B). ***Clinical Chemistry Laboratory.*** Medical students may participate in the program of Clinical Chemistry Laboratory. Students must receive the permission of the instructor. Weight: 1 per 9 weeks.

Terms 1, 2, 3, and 4: Sept.-Nov., Nov.-Jan., Jan.-March, April-May. *Habig*

°**BCH-315(B).** ***Molecular Genetics.*** An advanced course on genetic mechanisms and their relation to nucleic acids. Weight: 3 per 18 weeks. Terms 1 and 2: Sept.-Jan. *Guild and Staff*

°**BCH-347(B).** ***Special Topics.*** A lecture series on topics of current interest in biochemistry. Weight: 1 per 18 weeks. Terms 1 and 2: Sept.-Jan. *Staff*

°**BCH-348(B).** ***Special Topics.*** A lecture series on topics of current interest in biochemistry. Weight: 1 per 18 weeks. Terms 3 and 4: Jan.-May. *Staff*

°**BCH-351(B).** ***Genetics Seminar.*** Seminar devoted to current topics in genetics. Weight: 1 per 18 weeks. Terms 1 and 2: Sept.-Jan. *Gross and Staff*

°**BCH-352(B).** ***Genetics Seminar.*** Seminar devoted to current topics in genetics. Weight: 1 per 18 weeks. Terms 3 and 4: Jan.-May. *Gross and Staff*

°**BCH-354(B).** ***Biochemistry of Disease.*** Course is designed for the third or fourth year medical student who is interested in the primary defect, manifestations, and diagnostic aspects of diseases of metabolic or genetic origin. Examples of emphasis would include a study of primary defects in diabetes mellitus and other endocrine disorders, disturbances of electrolyte metabolism, genetic lipidoses, etc. Weight: 2 per 18 weeks. Terms 3 and 4: Jan.-May. *Handler and Staff*

BCH-355(B). ***Research in Genetics.*** In a limited number of cases, a student will be permitted to participate in the research program of a faculty member. Acceptance is by individual arrangement with the proposed faculty preceptor. Weight: 1-8 per 9 weeks. Terms 1 and 2: Sept.-Jan.

BCH-356(B). ***Research in Genetics.*** In a limited number of cases, a student will be permitted to participate in the research program of a faculty member. Acceptance is by individual arrangement with the proposed faculty preceptor. Weight: 1-8 per 9 weeks. Terms 3 and 4: Jan.-May, or June-Aug., summer term.

BCH-357(B). ***Research in Biochemistry.*** In a limited number of cases, a student will be permitted to participate in the research program of a faculty member. Acceptance is by individual arrangement with the proposed faculty preceptor. Weight: 1-8 per 9 weeks. Terms 1 and 2: Sept.-Jan.

BCH-358(B). ***Research in Biochemistry.*** In a limited number of cases, a student will be permitted to participate in the research program of a faculty member. Acceptance is by individual arrangement with the proposed faculty preceptor. Weight: 1-8 per 9 weeks. Terms 3 and 4 *or* June-Aug., summer term.

Cardiovascular-Respiratory Sciences Study Program

The Cardiovascular-Respiratory Sciences Program (CVS-201B) is designed to offer third-year students integrated instruction for one academic year in the basic sciences which relate to the cardiovascular and respiratory systems. The program is interdepartmental in nature and will constitute a full credit load for those students who participate. It is comprised of three parts that run concurrently.

1. *Individual Tutorial.* The student will identify with a senior member of the medical school faculty who is participating in the program. The major part of the educational program for the student will be in the form of individual tutorials with this member of the staff. This tutorial may be full-time independent research or an intensive study experience for the student. The student and his tutor will develop a plan and will review it with the directors of the program.

2. *Group Seminar.* A seminar series will be developed, the purpose of which is to read and discuss selected papers and discuss problems of instrumentation and topics which are considered complementary to the required lecture course. Students will be active participants in the seminar, and through this mechanism it is hoped to integrate knowledge of cellular physiology into an understanding of organ system function and control. Other seminars may be taken in addition to this.

3. *Lecture Course.* The course in cardiovascular and respiratory physiology and pharmacology offered by the Department of Physiology is required. This course will present selected topics in cardiovascular and respiratory physiology and pharmacology, including electrophysiology, mechanics, structure, developmental physiology, metabolism, energetics, peripheral circulation, diffusion, gas transport, mechanics of respiration and respiratory responses in hypobaria and hyperbaria. This course will meet twice a week for one hour each session. Other courses may also be taken. The student will be encouraged to complement his tutorial by taking at least one additional third-year course, if it is considered appropriate by the tutor and the program director.

The above plan provides a structured and recommended curriculum design. Within this framework multiple pathways are available because of the concentration of effort in the tutorial experience. Tutorials can be arranged within any of the basic science departments or with individuals in clinical departments whose orientation and research are consistent with the goals of the program. Once a tutor is identified, added flexibility is gained by having the option to elect courses in addition to the required course in physiology and pharmacology or to elect seminars in addition to the group seminar. Weight: 9 per 9 weeks. Terms 1, 2, 3, and 4 Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Johnson, Wallace, Renkin, Salzano, Sommer, Lieberman, Bressler, Starmer, Jobsis, Greenfield, Graham, Ebert, Boineau, and Holloway*

Clinical Cancer Training Program

Professor W. Shingleton, *Chairman*; Associate Professors J. Laszlo, G. Wilbanks, J. Cavanaugh, S. Porter, S. Heyden, Johnson

The Clinical Cancer Training Program, supported by a grant-in-aid from the USPHS, is designed to improve clinical cancer training for the medical student and for the postdoctoral trainee.

The basic course, Survey of Cancer, Basic and Clinical (CTP-209C), is an interdepartmental survey of basic and clinical cancer. It is offered as an elective to senior medical students and for postdoctoral fellows in the Training Program. Weight: 8. Terms 1 or 3: Sept.-Nov., Jan.-March.

Additional time is spent in those areas in the Medical Center primarily involved with cancer diagnosis and treatment, such as surgical pathology, radiotherapy, medical and pediatric hematology, and in-patient and outpatient tumor services of the Departments of Surgery and Obstetrics and Gynecology. The student or trainee may choose one or several of these areas in which to work, and individual programs can be developed for each participant according to his specific interests.

The Training Program is supplemented by a tumor registry where accurate follow-up records are available to staff and students. The data collected include results of treatment of large numbers of patients as expressed in percentages of those (1) free of recurrence, (2) apparently cured, (3) having a recurrence, or (4) dead of recurrence at varying times after onset of the disease and the institution of therapy.

The faculty for the Training Program consists of selected members of the Medical School faculty who possess an interest in clinical cancer teaching and who are designated for this type of teaching by their department heads.

Community Health Sciences

Professor E. Estes, Jr., *Chairman*; Professors J. Arena, W. DeMaria, E. Long, D. Smith (Emeritus), M. Musser, M. Woodbury. Associate Professors M. Bryson, S. Heyden, E. Persons, L. Pondy, Assistant Professors E. Hammond, J. Hayes, J. McFarland, M. Mauney, W. O'Fallon, R. Portwood, F. Starmer, H. Thompson, Associates F. Dalton, R. Howard, C. Knight, H. Kotin, D. Lewis, D. Nauman, J. Nowlin, R. Thompson, T. Thorpe, Research Associate F. Dorsey, Instructor H. Register, Visiting Scholar L. Goldwater.

Required Course

The required course in Community Health Sciences (CHS-200) will be given during the second year. Two hour lectures are given by faculty

and guests each week. This series serves as an introduction to biostatistics, epidemiology, industrial medicine, community health and family medicine, and transmission and natural history of some diseases.

Elective Courses

CHS-208(B). ***Medical Uses of Computers.*** The elements of digital computer programming and techniques of data storage and retrieval. Emphasis will be on familiarizing the student with possible uses of digital computers in a variety of medical data handling problems. Weight: 2. Terms 2 or 4: Nov.-Jan., April-May. *Thompson*

CHS-215(B). ***Biostatistics in the Medical Sciences.*** The theory and application of basic statistical concepts as they affect the design and analysis of biomedical research activities. Weight: 2. Term 3 or summer: June-Aug., Jan.-March. *O'Fallon*

CHS-203(C). ***International Health Organizations.*** Survey of history, organization, and accomplishments of W.H.O. and regional offices, and health programs of U.S. Agency for International Development, Alliance for Progress, Rockefeller, Kellogg, Milbank, Macy, and other foundations and private organizations. Weight: 1. Term 4: March-May. *Long and visiting lecturers*

CHS-205(C). ***International Medicine.*** Survey of interrelationships of health with political, economic, and educational programs with emphasis on problems of developing countries especially Latin America and Middle Africa. Course requires each participating student to prepare a written paper on a topic of his choice. Weight: 1. Term 4: March-May. *Long and visiting lecturers*

CHS-207(C). ***Research in International Health.*** A detailed study of a major health problem in the Western Hemisphere. Spanish language instruction included through summer school. Visit to Latin American country for which financial assistance is available. Weight: 2. Every term. *Long and Staff of U.N.C. School of Public Health*

CHS-210(C). ***Student Community Health Program.*** Study of community health problems in the United States and abroad. First summer: instruction at Duke and U.N.C. School of Public Health; instruction in Spanish. Second summer: field work under supervision in public health in Guatemala. Elective nine-week period in fourth year at mission hospital in Nicaragua. Financial aid available. Weight: 9. Term: June-Aug., summer term. *Long and DeMaria; Faculty of Department of Community Health Sciences, Duke; School of Public Health, U.N.C.; Department of Preventive Medicine, University of San Carlos, Guatemala; Dr. Edwin Wallace, Director, Gray Memorial Hospital, Nicaragua*

CHS-217X(C). ***Community Health in Georgia.*** An experience in applied community health sciences in Georgia. Epidemiology of cardio- and cerebro-vascular disease with the Evans County Study (started in 1960,

now in its second round).* Development of research projects depending on the special interest of the student leading to papers for publication Weight: 9. Term: June-Aug., summer term. *Dr. Heyden and Dr. Hames (general practitioner, director of the Evans County Study)*

CHS-219(C). ***Tutorial in Clinical Epidemiology.*** Selected topics will be chosen for intensive reading and discussion. Major emphasis is on cardio- and cerebro-vascular chronic-degenerative and major neoplastic diseases, including patient demonstrations on the ward. Weight: 2. Terms 3 or 4: Jan.-March, March-May. *Heyden*

PSC-305(B). ***Social and Cultural Aspects of Illness.*** Seminar on medical-social roles in community and hospital. Topics include physician-patient relationship and epidemiology of illness and health services in terms of ecology, social stratification, race, and life cycle. Students wishing further work in one particular topic, such as Negro subculture or gerontology, should take PSC-299(B) specifying particular interest. Weight: 3. Term 4: March-May. *Maddox, Palmore, and Jackson*

Endocrinology

Associate Professor H. Lebovitz, *Director*; Associate Professor H. McPherson, *Director, Endocrine Clinic*; Professor R. Bressler; Associate Professor D. Christian; Assistant Professors R. E. Fellows, R. Gibbs, and R. Turkington; Associates J. Feldman, S. Fortney, and T. Huff
Fellows K. Shultz, F. Neelon, B. Goldstein, J. Howard, J. Males, G. Cunningham, and H. Delcher

The Division of Endocrinology was organized by Dr. E. C. Hamblen in 1936 as a division of the Department of Obstetrics and Gynecology. In 1955 it was reorganized as an integrated service with a staff drawn from several clinical and preclinical departments. Its objective is to give comprehensive training in basic and clinical endocrinology and metabolism, particularly at the postgraduate level. Although individual senior staff members have their own special clinical and research programs, the division is organized so that clinics, conferences, ward rounds, and seminars are participated in as joint ventures by the entire staff. The endocrine laboratory and its services are available to all members of the staff equally. Resident physicians from Medicine, Obstetrics and Gynecology, and Pediatrics rotate through the endocrine division. At any one time there are usually four residents assigned to the division. Clinical and research fellows and trainees are assigned to individual senior staff members, depending on their major interest, but all participate essentially equally in the clinics, teaching rounds, and conferences.

The general Endocrine Clinic meets four mornings and the Metabolism-Diabetes Clinic one morning each week. The Pediatric Endocrine Clinic

*Room and board and mileage will be paid (Evans County Health Department).

meets one afternoon a week. All fellows have the opportunity to attend these clinics and in addition the clinical fellows assist in the care of the private patients with endocrine and metabolic disturbances including diabetes. Twice a month the Endocrine Clinic meets jointly with the neurosurgical tumor follow-up clinic to review patients with pituitary tumors and related brain lesions. Ward rounds on inpatients are held from 4 to 5 p.m., Monday and Friday and at 9 a.m. on Wednesday each week. An endocrine conference is conducted weekly. In addition, each of the supporting services (Medicine, Obstetrics and Gynecology, and Pediatrics) has special conferences, lectures, and seminars of endocrine interest which are available to the staff.

END-203(C). ***Research Topics in Endocrinology and Metabolism.*** Research training and experience in the field of endocrinology and metabolism. This is arranged individually between the student and a specific member of the endocrine staff. Weight: 8. Every term. *Lebovitz, Bressler, Gibbs, Turkington, and Staff*

END-207(C). ***Metabolic Response to Disease.*** This seminar series deals with the integrative aspects of the endocrine-metabolic response to disease states. Representative topics include the events involved in adaption to feeding, fasting, injury, surgery, infection, and certain medical disorders (i.e., diabetes, hypoglycemia, etc.). Weight: 1. Term 4: March-May. *Lebovitz, Bressler, McPherson, Gibbs, Turkington, and Staff*

Endocrinology Study Program

The Endocrinology Study Program (EDR-201B) is an interdepartmental program offering an opportunity for intensive study in endocrinology, neuroendocrinology, reproduction, and endocrine metabolism in Year 3. The program emphasizes guided independent study and the development of a tutorial relationship with a member of the Program faculty.

The Program curriculum, which provides full credit for Year 3, consists of the following components:

1. *The Endocrinology Study Seminar.* This meets twice a week and will focus on particular topics in endocrinology, reproduction, and metabolism in order to develop current concepts through critical evaluation of the literature.

2. The *Individual Tutorial.* The tutorial is arranged by consent with a Program faculty member will involve laboratory and/or library research in one aspect of endocrinology, reproduction, or metabolism.

3. A *Lecture Course.* Courses numbered PHS-402(B) and PHS-403(B), Endocrinology and Reproduction, will be taken by all students in the Program. In addition, other courses, selected either from a list of sug-

gested program electives or from any of the electives approved for basic science credit in the third year may be taken for up to two credits per term. Arrangements will be made for all interested students to meet with program faculty members to explore possible tutorial arrangements before they enter the Program. Weight: 9 per 9 weeks. Terms 1, 2, 3, and 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Fellows, and Staff*

Medicine

Professors J. B. Wyngaarden, *Chairman*, M. D. Bogdonoff, R. Bressler, J. L. Callaway, E. H. Estes, J. P. Hendrix, A. Heyman, W. Kempner, G. P. Kerby, W. S. Lynn, H. D. McIntosh, E. E. Menefee, M. J. Musser, W. M. Nicholson, E. S. Orgain, E. L. Persons, J. M. Ruffin, R. W. Rundles, S. M. Sessoms, H. O. Sieker, E. A. Stead, M. P. Tyor; Professors Emeritus O. Hansen-Pruss, D. T. Smith; Associate Professors T. E. Andreoli, S. H. Appel, C. E. Buckley, T. R. Cate, J. R. Clapp, W. L. Floyd, J. C. Greenfield, J. N. Kanfer, K. H. Kilburn, M. Kinsbourne, J. A. Kylstra, J. Laszlo, H. E. Lebovitz, H. T. McPherson, J. J. Morris, S. Osterhout, T. Peele, E. Peschel, J. B. Pfeiffer, J. Ramirez-R., R. R. Robinson, W. F. Rosse, H. A. Saltzman, H. K. Thompson, A. G. Wallace, R. E. Whalen; Assistant Professors C. M. Armstrong, J. P. Boineau, I. A. Brody, R. Fellows, C. J. Gerber, R. H. Gibbs, R. J. Gorten, J. C. Gunnells, W. N. Kelley, Y. Kong, N. M. Kredich, W. B. Kremer, M. E. McLeod, H. Nagaya, R. H. Peter, R. M. Portwood, H. R. Silberman, S. M. Schanberg, C. F. Starmer, J. P. Tindall, R. Turkington, J. J. West, D. L. Young; Associates V. S. Behar, C. Bennett, M. Dick, A. V. Escueta, J. M. Feldman, S. R. Fortney, R. S. Gilgor, J. Hijmans, T. A. Huff, L. S. Lessin, R. I. Lopez, P. A. McKee, S. M. McMahon, D. S. Miller, B. C. Newborg, J. E. Roberts, J. Ruskin, J. E. Rygorsky, J. T. Tomasini, S. H. Quarfordt; Clinical Assistant Professors A. D. Cooper, W. C. Styron; Clinical Associates S. W. Barefoot, W. Batten, J. R. Bumgarner, G. W. Crane, C. L. Curry, W. Fitzgerald, P. Gebel, H. E. Grode, T. T. Jones, C. Johnson, G. E. Koury, T. D. Long, E. Lupton, J. A. Lusk, D. E. Miller, J. A. Moore, H. T. Perkins, J. G. Robbins, W. V. Singletary, A. D. Smith, D. Welton; Clinical Instructors J. D. Hamilton, J. A. Merchant

Instructors H. V. Austin, R. Bache, W. T. Bennett, T. A. Bensinger, G. R. Blumenschein, W. H. Carter, O. Cordon-C., G. R. Cunningham, C. L. Curry, H. K. Delcher, V. W. Dennis, J. E. Douglas, A. L. Ferguson, B. W. Festoff, J. T. Garbutt, R. L. Goldenberg, B. M. Goldstein, L. F. Gregory, G. M. Halprin, K. Hanson, W. F. Holland, W. J. Howard, A. T. Huang, L. Johnson, R. J. Karpick, T. J. Kenney, W. J. Klein, S. E. Kohler, G. L. Logue, S. Lunzer, H. Maizel, J. L. Males, R. L. McGowan, W. E. Morris,

K. Nakajima, F. Neelon, G. A. Nottebohm, W. H. Obenour, K. Orme, E. Overfield, L. Pearce, A. R. Price, B. Ramo, D. C. Rausch, L. A. Roman-I., M. Rotman, K. Schultz, P. D. Springberg, M. Waggoner, G. Wagner, W. R. Warr, M. Waxman, R. Wilkins, M. J. Zitt, D. M. Treiman

Chief Residents J. E. Rygorsky, J. U. Gutterman, S G. Romeo, M. P. Rozear

Assistant Residents C. E. Bemis, A. E. Boyd, D. L. Brewer, W. S. Elias, J. F. Hallal, A. Walston, H. J. Zeft, D. G. Allen, T. D. Beardmore, W. H. Bell, L. J. Bynum, J. N. Davis, J. P. Gockerman, M. S. Horwich, G. S. Hunn, H. B. Kelso, M. E. Kendall, A. B. Latty, W. F. Malzone, K. M. Matchett, M. E. Matthews, B. D. McLees, R. F. Miller, H. B. Mundy, R. S. Panush, A. H. Pribble, R. A. Rosati, C. J. Rubenstein, C. H. Srodes;

Interns D. W. Allen, W. N. Brandt, E. W. Braun, A. S. Brenner, M. J. Brickman, R. L. Carolla, J. W. Cook, J. J. Gallagher, R. W. Gause, J. H. Hall, D. P. Henry, D. S. Hutchison, W. G. Elmore, L. A. Kerson, G. A. Lehman, G. M. Levine, W. S. Logan, D. F. Mandetta, R. G. Matthews, D. F. Mosher, T. E. Nash, D. F. Newton, W. P. Nixon, M. D. Parker, H. F. Pross, J. R. Rice, G. H. Stoltzner, W. P. Taylor

Required Course

The Department of Medicine traditionally has the responsibility of preparing the student for a lifetime of learning as he gives care to patients who ask him for help. The first step is to begin to think and act like a doctor. A course in the first year—Introduction to Clinical Medicine (MED-201)—prepares the student to take an active role in patient care.

The student assigned to Medicine (MED-205) in the second year or electing Medicine in the fourth year acts in the role of a physician. His desire to give good care is the motive which drives him to excellence. He learns to identify properly the problems of the patient. Having identified the problems, he marshals the information he can bring to bear on them by his past training; he recognizes the gaps in his knowledge as he attempts to focus the information learned from the basic sciences onto the specific clinical problem. Using the patient as his means of integration, he continues his reading in anatomy, physiology, microbiology, pharmacology, and biochemistry. He reads widely in medical texts. In this clinical setting, he discusses the problem with his fellow students, interns, residents, and senior staff; he gains familiarity with ideas and concepts by actively manipulating them.

The student crystallizes his idea of the best diagnostic and therapeutic approach to his particular patient. He identifies the reasons for each of these decisions. He has real curiosity to see if his evaluation of the situation is correct or in error.

Under guidance from his fellow students, from house staff, and from faculty of all ranks, he slowly appreciates the difficulties of learning a

system of medicine in which disease manifestations and host responses are highly variable. He learns that the "textbook picture" is a composite seldom seen. Part of a doctor's learning is only experimental. He knows from living with his patients that certain things are possible, but he may not know the underlying sequence of events. In other instances, his learning is more precise because he understands the mechanism of the disease and can control some of the important variables. He must learn both the liabilities and virtues of attempting to use logic in clinical practice.

The goal of the Department of Medicine is for the student to have as many learning experiences as possible in which he plays an active role. We hope that he will enjoy these learning experiences so much that he will continue them as long as he sees patients. We are not interested in covering the entire field of medicine. The student will engage in extensive postdoctoral clinical or research training. We want him to acquire the scientific knowledge, clinical skills, and learning habits that will enable him to identify and solve new problems as he encounters them. We are not concerned that a new area of knowledge is being explored without our guidance.

In caring for our patients with ill-defined genetic and acquired differences and with many variables of unknown strength at play, many erroneous conclusions are drawn. The student has to learn to examine statements, both oral and written, with care, and to ask of all authorities the source of data which underlie their conclusions. One way for the student to learn the difficulties in drawing accurate conclusions about biological systems is to give him the opportunity to establish some fact on the basis of his own research. This is a very effective method of teaching. The intellectual discipline involved better prepares the future clinician for the role of a lifetime learner. The experience also enables the academically oriented student to assess his own potentialities for an investigative career.

MED-201. ***Introduction to Clinical Medicine.*** This course is designed to introduce the student to the methods involved in obtaining information about patients and their problems by means of accurate and complete taking of history and performance of physical examination and laboratory examination. Early in the course, the student is taught the methodology of the patient interview, the essentials of the examination of various organ systems, and the techniques and meaning of the hematological and other laboratory examinations by means of introductory lectures and experience with patients on the ward and in the laboratory. Information obtained in the other first year courses is correlated with clinical manifestations of health and disease. In the latter part of the course, the abnormalities found in the physical examination of certain organ systems are correlated with the abnormalities of laboratory values found in such patients. Patient conferences are used to demonstrate the value of bring-

ing to bear all the means of obtaining data about the patient in solving his problems. The student is expected to learn to do this in patients with whom he has contact during the ward sessions.

MED-205. *Medicine.* The second year course in medicine is aimed at providing the student with the basic tools used in the practice of medicine. This is the time when he should consolidate the material learned during the first year and apply it to the study of his own patients. During a brief seven week course it is not possible to cover systematically the entire body of knowledge of internal medicine; instead, the student is provided a series of representative learning experiences based on the case study method. Our goals are to teach a method of approach to the patient, and to provide a firm foundation for the solution of new medical problems as they are encountered in the months and years ahead. Specific expectations of the sophomore student are listed below.

1. The student is expected to obtain and carefully record meaningful histories and physical examinations from two or three patients each week. On the night of admission the student will review and compare his findings with the responsible intern or resident; points of difference should be settled where possible by return of the two persons to the bedside. The following day the student will present his data to the attending physician. The presentation should be well organized (with the help of the resident), and the present illness should include a carefully reasoned documentation of the events which led to the patient's hospitalization, given in chronological order. It should contain pertinent facts leading to the most likely diagnosis and also the pertinent negative facts which weigh against a possible alternative diagnosis.

2. A student is expected to examine his patients repeatedly and reflect on the diagnostic and therapeutic management. It is his responsibility to understand the objectives and to know the results and the interpretation of all diagnostic tests applied to his patients. He will actually perform as many of the necessary tests as possible. He will record his thinking in frequent progress notes.

3. The student is expected to read widely on topics related to his patients with particular emphasis upon applying basic science knowledge to the understanding of disease mechanisms. He should begin with the descriptions in standard textbooks of medicine which serve as a useful introduction to the subject. Special aspects of the patient's problem should be pursued in basic science or other textbooks, in monographs, or in relevant journal articles.

4. The student is expected to know in depth those diseases present in his own patients, including differential diagnostic features which distinguish those conditions from related diseases. At this stage of training he is not expected to have equivalent depth of knowledge of diseases that he has not encountered, but he is responsible for knowing the major points about patients presented on rounds or at the various noon confer-

ences. Principles of therapy should be understood; details of drug regimens are better left for subsequent experiences. The student is encouraged to participate actively in all teaching exercises on the ward, whether or not his own patients are being discussed.

Elective Courses

MED-207(C). ***Advanced General Medicine.*** The student is assigned to inpatient and outpatient medical services, and is responsible for patients assigned to him. He will learn about disease and its management through the staff and consultants directly concerned with the patients. Weight: 8. Every term. *Wyngaarden and Staff*

MED-209(C). ***Allergy and Respiratory Diseases.*** Course provides both introduction and in-depth training in the clinical and laboratory aspects of allergic and respiratory illnesses. Patients are assigned to the student from both the in- and out-patient services. Seminars and conferences are held throughout the week for instruction in allergy, clinical immunology, basic immunology, pulmonary function evaluation, and pulmonary physiology. Weight: 8. Every term. *Buckley, Cate, Kilburn, Kystra, McMahon, Menefee, Nagaya, Pratt, Ramirez-R., Saltzman, and Sieker*

MED-211(C). ***General and Behavioral Medicine.*** Clinical care for patients with a variety of medical (cardiovascular, endocrinologic) illnesses, both ambulatory and inpatient, in which the behavioral response to illness receives special attention. Weight: 8. Every term. *Bogdonoff*

MED-213(C). ***Cardiovascular Diseases.*** The course is designed to provide the student with a broad experience in cardiovascular disease with primary emphasis being on learning through participation in patient care, and diagnostic procedures such as cardiac catheterization, phonocardiography, etc. Weight: 8. Every term. *McIntosh, Orgain, Floyd, Wallace, Morris, Peter, Estes, Whalen, and Staff*

MED-215(C). ***Clinical Dermatology.*** Students will be assigned to public and private outpatient clinics and will be assigned public and private patients in the hospital in an effort to understand the pathologic physiology of dermatologic disorders and thus management and treatment. Weight: 1-8. Every term. *Callaway and Tindall*

MED-217(C). ***Gastroenterology.*** The role of the gastrointestinal tract and liver in health and disease is emphasized through use of liver and small bowel biopsy with morphological, biochemical, and physiological studies in the daily diagnosis and care of patients hospitalized on the gastroenterology inpatient service and general wards. Weight: 8. Every term. *Tyor, Hijmans, McLeod, Quarfordt, Ruffin, and Young*

MED-221(C). ***Metabolism and Endocrinology.*** A general course in the clinical and laboratory diagnosis of metabolic and endocrinologic disorders. The student participates in the work up and management of both inpatient and outpatient problems. Weight: 8. Every term. *Lebovitz, McPherson, Nicholson, Bressler, Gibbs, and Turkington*

MED-227(C). *Rheumatic Diseases.* The student acquires experience in depth in the recognition and care of patients with generalized connective tissue diseases. He works up and follows patients on wards and in clinic. Daily rounds with the staff extend his experience. He learns specialized laboratory and clinical techniques. Weight: 8. Every term. *Kerby, Persons, Roberts, Wyngaarden, and Kelley*

MED-229(C). *Nephrology.* Fundamental and clinical aspects of nephrology, renal physiology, hypertension, renin-angiotensin metabolism, and disorders of salt and water metabolism. Full clinical participation on inpatient and outpatient services and the dialysis service is offered. Attendance at several scheduled rounds, conferences, and seminars is required. Weight: 8. Every term. *Robinson, Andreoli, Bennett, Clapp, Gunnells, and Peschel*

MED-231(C). *Clinical Hematology and Oncology.* Unique opportunity to participate actively in care and study of patients with wide variety of hematologic diseases—anemias, bleeding disorders, leukemias, lymphomas, secondary gout, etc. Systematic, quantitative clinical evaluation, and basic techniques of blood and marrow examination, serum and urine protein studies. Weight: 8. Every term. *Rundles, Silberman, Laszlo, and Rosse*

MED-232(C). *Clinical Oncology.* Instruction in techniques of laboratory and clinical diagnosis and patient care with emphasis on classic hematologic problems and treatable neoplasms. Weight: 6. Every term. *Rundles, Silberman, Laslo, and Rosse*

MED-234(C). *Metabolic-Genetic Disease Seminar.* This course will explore in detail clinical, metabolic, and genetic information on inborn errors of metabolism. It will include patient presentations, staff lectures, student seminars, textbook, and literature reading. The group will be small enough to permit maximal personal interaction. Weight: 3. Term 3: Jan.-March. *Wyngaarden, Sidbury, Appel, Kelley, Kredich, Lessin, and Staff*

MED-240(C). *Cardiovascular Research.* Opportunities for a nine-week research experience can be arranged with many of the members of the Cardiology Division. This program is flexible and the availability in a given area will vary from quarter to quarter. Details of the program may be discussed with Dr. McIntosh and then with the specific staff member. Weight: 4-8. Every term. *McIntosh, Morris, Wallace, Greenfield, Bressler, Thompson, Kong, Peter, Chen, and Ruskin*

MED-242(C). *Clinical Cardiology.* A broad experience in cardiovascular disease is provided by participation in patient care on Cardiac Care Unit and diagnostic procedures such as cardiac catheterization, phonocardiography, and daily reading of electrocardiograms. Weight: 8. Every term. *Orgain, Floyd, and Whalen*

MED-244(C). *Clinical Cardiology.* Fundamentals of electrocardiography, vectorcardiography, and diagnostic techniques in cardiology. Stu-

dent makes cardiology rounds daily with staff. Three one-hour periods each week with Dr. Estes concentrating on physical diagnosis in cardiac patient. No direct patient responsibility, but students will observe techniques used in diagnosis and management of cardiologic problems. Weight: 8. Every term. *Ruskin, Zeft, Estes, and Greenfield*

MED-246(C). ***Clinical Cardiovascular Physiology.*** Physiologic measures and anatomic details at cardiac catheterization used to teach principles of physical diagnosis, clinical management, and interpretation of pathophysiology in congenital, rheumatic, and coronary artery disease. Patients assigned with responsibilities for initial evaluation, physical examination, thorough laboratory study and interpretation. Weight: 8. Every term. *Morris, Kong, Peter, Behar, and Chen*

MED-248(C). ***Behavioral Medicine Applied to Cardiovascular Disorders.*** An introduction to the methods and data of behavioral medicine as it applies to patients on a Cardiac Care Unit. Instruction takes the form of supervision of student's work with patients during Clinical Cardiology term and reading assignments. Weight: 8. Every term. *Bogdonoff*

MED-250(C). ***Allergy and Clinical Immunology.*** Preceptorship in the laboratory evaluation of patients with immunophysiologic alterations. A review of basic immunology relevant to patient care is reinforced by application to clinical problems available on ambulatory and ward services. An in-depth clinical exploration of disease related immunologic problem and understanding of relevant literature is the basis of an assigned term paper. Weight: 8. Every term. *Buckley and Nagaya*

MED-252(C). ***Physiological Aspects of Nephrology and Electrolyte Metabolism.*** A didactic seminar-review of selected aspects of the clinical physiology of patients with renal diseases and alterations of electrolyte metabolism. Weight: 1. Every term. *Robinson and Clapp*

MED-254(C). ***Enterohepatic Circulation and Lipoprotein Metabolism.*** There will be detailed explorations of biological and related clinical aspects of hepatic and intestinal functions. The course will be structured chiefly through lectures and relevant patient presentations. Weight: 2. Term 1: Sept.-Nov. *Tyor, Lack, Young, Quarfordt, McLeod, and Hijmans*

MED-256(C). ***Ambulatory Patient Care.*** The student is assigned to the outpatient department and emergency room and will see patients assigned to himself and one member of the house staff. He may design an individualized outpatient/emergency room schedule which will permit him to have a specific type of experience in the care of acute and chronic problems with senior staff consultation and supervision. Weight: 1-8. Every term. *Bogdonoff and Department of Medicine Staff*

SUR-223(C). ***Medical and Surgical Renal Disease.*** Experience is offered in diagnosis and management of surgical diseases of the urinary tract and medical renal diseases. Participation in special urologic clinics

and exposure to hemodialysis is offered with emphasis upon renal transplantation, renal failure, renovascular hypertension, and other aspects of medical and surgical disease. Weight: 8. Every term. *Glenn, Robinson, respective staffs*

PSC-331(C). ***Dynamic Approach to Medical Problems Based on Psychoanalytic Theory.*** This course will be structured that the tenets and ideas of psychoanalytic psychology will be applied to the ancillary part of the total part of the management of patients on medical and surgical wards (a certain kind of psychosomatic approach). Weight: 2-4. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May.

Medical Research Training Program

Professor W. R. Guild, *Director*; Associate Professor T. McManus; Assistant Professors W. Longley, W. Kredich, L. Siegel, K. V. Rajagopalan, H. K. Thompson, P. Harriman, D. Hall

The Medical Research Training Program (MRT-399B) is an elective available to qualified students in September of their third or fourth calendar year of medical school and to members of the resident staff and postdoctoral fellows with the M.D. degree.

The objective is to give the participant a sound basis for further training directed toward a career in investigative medicine and biology, with opportunity to do individual research for an extended period of time under the direction of a faculty member. Up to sixteen applicants are admitted annually, about half pre- and half post-doctoral, on the basis of interviews by a faculty committee who consider past academic performance and evidence of research bent and curiosity.

The formal part of the program occupies the academic year from September to June. It consists of three months of intensive laboratory, lecture, and seminar sessions centered around molecular and cellular biology, didactic courses in mathematics and biomathematics which extend through the year, and a series of student seminars on current research literature during the period January to May. In December each participant selects a research mentor and, with his guidance, works on a problem for seven to fourteen months. In May he presents a seminar on his research accomplishments to that time.

Special lectures and seminars are given by guests from other institutions and by members of the University. The entire program is housed in a special wing of the W. B. Bell Medical Research Building and is directed by members of the faculty who devote a major part of their effort to this program.

The minimum participation in this program is for the period September to June, of which at least two quarters must be non-credit time, for

which a stipend will be paid. The student is urged to plan on a longer period, however, as follows: By taking clinical work in the first and second summers and research in the third, he may put together a block of fourteen to seventeen calendar months (September to the following November or January), devoted to basic science and still graduate on time with the normal 50-50 mixture of clinical and basic credits in the elective years of the new curriculum.

To achieve this, credit will be given for continued research time following completion of the formal program in June, with evidence of satisfactory performance to be certified by the student's faculty research director. In the fall of the fourth academic year, the participant may continue research, take courses, or combine the two, as seems best at that time.

Students who already know they wish to go on to a Ph.D. degree are advised to use the time for intensive basic coursework, rather than to take this program. For those who find they wish to do so after some research experience, however, the Graduate School of Duke University will accept the time in this program as part of the residence requirement for a Ph.D. In addition, the student must satisfy course and examination requirements specified by the department of his choice, as well as the language and dissertation requirements of the Graduate School.

Those interested in this program are encouraged to discuss it with the Director early in their career, in order to plan how best to use their summers. It is desirable to obtain the maximum summer credits before September of the third year. Weight: 9. Terms 1, 2, 3, 4, and summer: Sept.-June, June-Aug. research. *Guild, Director; staff*

Microbiology and Immunology

Professor W. K. Joklik, *Chairman*; Professors D. Amos, J. Beard, N. Conant, E. Day, J. Larsh, H. Willett; Associate Professors R. Burns, S. Osterhout, R. Metzgar, R. Wheat, C. Zmijewski; Assistant Professors W. Boyle, H. Nielsen; Associate R. Buckley

Research Associates K. Anderson, M. Korczynski, E. Scheer, J. Skehel, R. Smith, I. Shif, H. Zweerink, C. Andrus, H. Bashir, H. Ohanian, L. Wilson

Research Assistant I. Cohen; *Technical Associate* H. Craig; Instructors A. Proctor, F. Ward; Fellow B. Hattler

Required Course

The required course in Microbiology (MIC 200) is given in the second term of the first year. An intensive study is made of the common bacteria, fungi, and viruses which cause disease in man. The scope of the labora-

tory course is reasonably wide and acquaints the student with all the methods and procedures employed in bacteriological laboratories. Most of the lecture time is devoted to the immunological and epidemiological aspects of infection. The instruction is designed to give the students a clear concept of: (1) how organisms gain entrance to the body, (2) the type of toxins which they produce, (3) the nature of the immune bodies which are produced by the host, and (4) the methods of preventing the disease by active and passive immunization.

Elective Courses

°**MIC-201(B).** ***Advanced Microbiology.*** The nature of the growth, composition, structure, and metabolism of the microbial cell with emphasis on the molecular, biochemical, and immunochemical aspects. Weight: 1½ per 9 weeks. Terms 1 and 2: Sept.-Jan. *Wheat*

°**MIC-225(B).** ***Yeasts, Fungi, and Actinomycetes.*** A modern approach to the biology of fungi and actinomycetes emphasizing the structure, variation, physiology, and importance to human affairs. Weight: 1½ per 9 weeks. Terms 1 and 2: Sept.-Jan. *Nielsen*

°**MIC-231(B).** ***Fundamentals of Immunology.*** Cellular and humoral responses to foreign (antigenic) substances. The induction of immunity, detection, measurement and nature of antibodies, classes of antigens, allergic and other abnormal reactions, immunogenetics of homograft rejection, tolerance and immunologic enhancement. Weight: 1½ per 9 weeks. Terms 1 and 2: Sept.-Jan. *Amos, Boyle, and Buckley*

°**MIC-232(B).** ***Immunology of Cell Surfaces.*** Examination of the specificity and organization of mammalian cell surfaces as revealed by immunological investigations. Antigen topology, composition, and implication in membrane organization. Control of antigen expression in abnormal states. Relevance to recognition, contact, and aggregation. Weight: 1 per 9 weeks. Terms 3 and 4: Jan.-May. *Boyle*

MIC-233(B). ***Immunological Studies of Human Tissue Antigens.*** This course is intended to provide the student interested in various human tissue diseases with an opportunity to study in the laboratory some of the immunological aspects of these diseases. Weight: 3 per 9 weeks. Terms 1 and 2 or 3 and 4: Sept.-Jan., Jan.-May. *Metzgar*

°**MIC-234(B).** ***The Immunobiology of Disease.*** Advanced treatment of immunologic concepts and investigative techniques useful in understanding human disease. Begins with resumé of human immunophysiology including interaction of genetic and environmental factors. Dynamic role of impaired immunologic function, compensatory hypersensitivity states, and environmental factors is examined from perspective of natural history of various diseases. Weight: 1½ per 9 weeks. Terms 3 and 4: Jan.-May. *Buckley*

°**MIC-271(B).** ***Cell Biology.*** The interaction between viruses and cells

as reflected in cell kinetics, information transfer, development and differentiation, and cell-cell interaction. Weight: 1½ per 9 weeks. Terms 1 and 2: Sept.-Jan. *Joklik*

MIC-310(B).** ***Microbial Physiology. A lecture and seminar course on the physiology and comparative biochemistry of microorganisms. Weight: 1½ per 9 weeks. Terms 3 and 4: Jan.-May. *Burns*

MIC-311(B).** ***Immunochemistry I. Antibodies. Structure of antibody molecules. Nature of combining site. The hapten as a molecular probe. Forces involved in antigen-antibody interaction. Precipitation reaction. Purification and modification of antibodies. Antigenicity. Weight: 1 per 9 weeks. Terms 1 and 2: Sept.-Jan. *Day*

MIC-312(B).** ***Immunochemistry II. Antigens. Structure of antigens. Combining regions. Nature of specificity and cross-reactivity. Methods and limitations of study. Haptens. Synthetic and natural antigens. Biologically active substances as antigens. Weight: 1 per 9 weeks. Terms 3 and 4: Jan.-May. *Day*

MIC-313(B).** ***Immunohematology. A study in depth of human blood group systems with particular emphasis on the immunologic aspects and practical applications for clinical and experimental purposes. Some laboratory demonstrations will be given. Weight: 1 per 9 weeks. Terms 1 and 2: Sept.-Jan. *Zmijewski*

MIC-316(B).** ***Immunogenetics. Antigens of tissues and organs, distribution, extraction, and chemistry. Phylogeny of isoantigenic systems of man and animals. Tests for histocompatibility including lymphocyte interactions and reactivity. Change in antigenicity and immune responsiveness in carcinogenesis. Immunologic factors in pregnancy and in homotransplantation of organs. Weight: 1 per 9 weeks. Terms 1 and 2: Sept.-Jan. *Amos, Boyle, and Southworth*

MIC-325(B).** ***Medical Mycology. Intensive study of these fungi which cause disease in man and animals, and will emphasize the diagnosis and treatment of fungus infections as well as give special attention to the epidemiology and public health significance of the fungi. Weight: 4. Term: Month of July. *Conant and Nielsen*

MIC-334(B). ***Immunochemistry of Cell Surface Components.*** An experimental research seminar course designed to give the student a working knowledge of the composition, structure, metabolism, and immunological nature of the cell surface components of bacterial, fungal, and mammalian cells. Acceptance is by individual arrangement with Dr. Wheat. Weight: 1-8 per 9 weeks. Terms 1 and 2 or 3 and 4: Sept.-Jan., Jan.-May. *Wheat*

MIC-336(B). ***Human Histocompatibility Testing Procedures.*** A laboratory course designed to familiarize the student with problems of tissue typing for transplantation. Weight: 4. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, April-May. *Zmijewski*

MIC-338(B). ***Microbial Biochemistry.*** A methods and research course

designed to acquaint the student with the composition of microbial cell with emphasis on the chemistry and biosynthesis of macromolecules Weight: 5. Terms 1, 2, 3 or 4: Sept.-Nov., Nov.-Jan., Jan.-March, April May. *Burns*

MIC-339(B). ***Diagnostic Microbiology and Infectious Diseases.*** Intro duction to the methods for the laboratory diagnosis of infectious diseas and their clinical application. Weight: 8. Terms 1, 2, 3, 4: Sept.-Nov. Nov.-Jan., Jan.-March, April-May. *S. Osterhout*

MIC-399(B). ***Special Readings in Microbiology and Immunology.*** A individual reading and/or laboratory course in specialty areas supervise by an individual faculty member of the graduate staff. Acceptance nature of topic, and amount of credit by individual arrangement wit proposed faculty member. Weight: 1-3 per 9 weeks. Every term.

MIC-401(B). ***Pathophysiology of Infectious Diseases.*** Lecture an seminar course concerning mechanisms by which infectious agents caus disease in various organs, and the diagnosis, treatment, and prevention o such illnesses. Weight: 2. Term 4: March-June. *Katz, Buckley, Cate Lang, and S. Osterhout*

MIC-403(B). ***Investigative Problems in Disease Caused by Viruse and Mycoplasmas.*** Introduction to techniques for research with viruse and mycoplasmas; clinical experience with infectious diseases related t the investigative programs. Weight: 8. Terms 1, 2, and 3: Sept.-Nov. Nov.-Jan., Jan.-March. *Cate, Katz, and Lang*

Neurologic Sciences Program

Neurology: Professors A. Heyman, T. Peele; Associate Professors S. Appel J. Kanfer, M. Kinsbourne, J. Pfeiffer; Assistant Professors C. Armstrong, I Brody, S. Schanberg, J. West; Associates A. Escueta, R. Lopez; Fellows B Festoff, S. Lunzer, L. Pearce; Residents L. Burger, C. Gerber, M. Rozear N. Weng; *Neuropathology:* Professor S. Vogel; Assistant Professor J Parker, G. Klintworth; *Neuroradiology:* Associate Professors J. Goodrich J. Goree; Assistant Professors R. Gorten, I. Johnsrude; Associate J Jiminez; *Neurosurgery:* Professor G. Odom; Associate Professor B Nashold; Assistant Professor S. Mahaley; *Pediatric Neurology:* Professor J Sidbury; Associate Professors M. Kinsbourne, T. Peele; Associate A Renuart; *Electroencephalography:* Professor W. Wilson, Associate Profes sor R. Green

The Neurologic Sciences Program was established in April, 1964, t integrate and enlarge the neurologic teaching and research facilities i the Medical Center. It is an interdisciplinary unit comprised of severa preclinical and clinical departments whose interests are specifically related to the various neurologic sciences. Its purpose is to provide greate

learning experience for the undergraduate student and more comprehensive opportunities for training and research at the graduate level. The Program is designed to train physicians and scientists who will have an understanding of the concepts and mechanisms of neurobiology with particular application to the diseases of man.

The Program is directed by an operating committee composed chiefly of the chairmen of the various departments of the Medical School related to the neurologic sciences. The staff members include personnel from ancillary divisions in the Medical Center such as neurophysiology, neuroradiology, clinical pharmacology, pediatric neurology, and psychology. Joint faculty appointments in neurology and in other clinical or basic science departments have been encouraged and have provided an integrated approach to the teaching and research training of the undergraduate and graduate physician. Although each staff member has his individual teaching and research interests, all participate actively in joint conferences, ward rounds, and seminars given primarily for the undergraduate and graduate student interested in the neurologic sciences. These teaching activities are designed to provide the student with an understanding of the problems of clinical neurology as well as to introduce him to research experience which will serve as a foundation for his future study of the nervous system.

Research laboratories are available for undergraduates and graduates preparing for careers as physician-scientists, and elective courses are offered in the Medical Center for junior and senior year medical students planning to specialize in one of the neurologic or behavioral sciences. The Program thus offers comprehensive opportunities for unique interdisciplinary training in the basic and clinical neurosciences.

Elective Courses

NSP-202(C). ***Introduction to Clinical Neurology.*** Over-all view of clinical neurology for non-specialist. Emphasis on clinical techniques in neurologic examination, approach to neurologic diagnosis and anatomic, pathologic and physiologic basis for localization of neurologic lesions. EEG and neuro-roentgenogram interpretation. Common neurologic disturbances at bedside conferences. Weight: 2. Every term. *Lopez and Neurology Staff*

NSP-204(C). ***Correlative Neurosciences.*** A general view of clinical neurology with emphasis on relation to basic neurosciences. Course especially for students planning careers in psychiatry, internal medicine, pediatrics, orthopaedics, or neurology. Opportunities for examination of patients with neurologic diseases, discussion seminars with preclinical neuroscientists and attendance at neurology, neuropathology, and radiology conferences. Weight: 4. Every term. *Brody and Neurology Staff*

NSP-206(C). ***Clinical and Laboratory Clerkship in Neurology.*** Stu-

dents interested in pursuing research or clinical careers in Pediatrics, Medicine, Neurology, Psychiatry or Neurosurgery. Emphasis on bedside and out-patient teaching of neurologic diseases along with interpretation of laboratory techniques. Weight: 8. Every term. *Heyman and Neurology Staff*

NSP-208(C). ***Course in Cognitive Neurology.*** The syndromes arising from focal cerebral damage studied at bedside and by experimental psychological methods. Emphasis on detailed analysis of disturbed cerebral function (aphasia, agnosia, etc.). Comparable methods used to study children with reading and writing difficulties. Instruction will be given in experimental psychological techniques. Students assigned to on-going research projects. Weight: 8. Term: Sept.-Nov. *Kinsbourne*

NSP-212(C). ***Neuromuscular Diseases.*** Particularly for students planning careers in orthopaedics, neurology, or other specialties involving pathophysiologic mechanisms of neuro-muscular diseases. Clinical presentation of selected cases and laboratory demonstrations of diagnostic and experimental techniques for study of patients with muscular dystrophy, myopathy, peripheral neuropathy. Weight: 1. Term 1: Sept.-Nov. *Brody, Armstrong, and West*

NSP-214(B). ***Research Preceptorship in Molecular Neurobiology.*** Research on control mechanisms of gene expression in mammalian central nervous system, including an approach to the biochemical basis of memory; namely RNA and protein synthesis, information storage in synapse membrane systems, and the effect of ionic fluxes on macromolecular synthesis *in vivo* and *in vitro*. Weight: 8. Every term. *Appel*

NSP-216(B). ***Research Preceptorship in Neurochemistry.*** This course consists of the active participation in research on the metabolism and function of lipids in the central nervous system with emphasis on the intermediary metabolism of the complex sphinoglipids of the brain. Includes biochemical approach to certain inborn errors of metabolism (e.g., Gaucher's, Nieman-Pick, and Tay-Sach's diseases). Investigation of problems of myelination and demyelination, as well as the role of lipids in the basic function of lipids in synaptic transmission, memory, and membrane integrity. Weight: 8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Kanfer*

NSP-218(B). ***Research Preceptorship in Biochemistry of Muscle Proteins.*** This course consists of participation in research projects on the properties and function of muscle proteins, such as actin and myosin. Present emphasis is on the function of the nucleotide attached to the actin molecule and its role in the events leading to contraction. Studies of alterations of the actin molecule and other proteins in diseased states and in the various types of muscle is also contemplated. Concurrent work in related areas of muscle biochemistry and physiology will also be encouraged. Weight: 8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *West*

NSP-220(B). *Neural Function and Behavior.* Correlates neural substrate of brain with behavior of man and higher mammals emphasizing relationship of cognitive processes to organization of cerebral hemisphere. Effects of selective stimulation and destruction of cerebral tissue reveals principles of brain organization. Experimental behavioral techniques applicable to humans. Weight: 4. Term 1: Sept.-Nov. *Kinsbourne*

Neuroscience Study Program

The Neurosciences Study Program (NSS-201B) is an interdepartmental interdisciplinary program designed to coordinate the study of Neurobiology in the third year curriculum. The program permits the student an opportunity for independent study and growth in Neurobiology under the guidance of several basic science faculty members engaged in research in the nervous system.

The program will last for 36 weeks. Participation in the program requires active participation in a Neurobiology study group tutorial and in a preceptorship with one of the basic science faculty members. The group tutorial will permit students to gain understanding of several different aspects of neurological science. Topics will encompass recent advances in morphological, biochemical, physiological, and immunological approaches to the nervous system. The essential portion of the program will be a preceptorship which may consist of a laboratory research or an intensive study experience. Students will select their neuroscience preceptor after consultation with faculty members of the Neurosciences Study Program. To supplement this experience the student will be encouraged to select concurrent course work (1-1½ credits per every 9 weeks). Weight: 8-9. Terms 1, 2, 3, and 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Appel*

Obstetrics and Gynecology

Professor R. Parker, *Chairman*; B. Carter, Professor and Chairman Emeritus; Professors W. Cherny, W. Cuyler, C. Peete, W. Thomas; Associate Professor A. Christakos, C. Christian; Associate Clinical Professor E. Easley, R. Pearse; Assistant Professors N. Anderson, M. Crenshaw, D. Schomberg, G. Wilbanks; Assistant Clinical Professors T. Adkins, W. Graham, K. Podger, Associate C. Hammond; Clinical Associates T. Stokes, R. Williamson

Research Associates C. P. Jones, L. Kaufmann; *Instructors* J. Younger, R. Yowell; *Fellows* R. Bechtel, J. Danford, T. Wyatt; *Residents* J. Herring, E. Long, B. Baker, W. Goldston, D. Halbert, J. Huddleston, K. Johnson, D. Jones, C. Parker, J. Sherer, E. Sowell, L. Wasserman

Required Courses

The first year student receives instruction in the fundamentals of obstetric and gynecologic history and pelvic examination during their course in Introduction to Clinical Medicine.

The second year student spends seven weeks in General Obstetrics and Gynecology (OBG-202). The student attends lectures, works daily in the general and special outpatient clinics, and is assigned patients on the obstetric and gynecologic wards. Students sharing in patient care and in teaching exercises is required. Tutorials are held daily with the senior faculty encouraging student participation. Lectures, Clinical Conference, Gynecologic Pathology Conference, Endocrine Conference, and Correlative Seminars are a part of his learning experience and are outlined below.

Elective Courses

OBG-205(C). ***Gynecologic Cancer.*** A survey of malignancy of the reproductive system. The didatic portion of the course is supplemented by presentations of patients currently in therapy on the wards and in the Gynecologic Cancer Clinic. Weight: 2. Every term. *Parker*

OBG-207(C). ***Pathology: Obstetric and Gynecologic.*** Study of normal and pathologic processes in the female in the field of obstetrics and gynecology. Current gross and histologic specimens reviewed along with related material in study collections. Clinical, experimental, and theoretical correlations made when applicable. Weight: 2. Terms 2, 4, or Summer Term: Nov.-Jan., March-May, June-Aug. *Wilbanks, Parker, and Gyn. Resident on Surgical Pathology*

OBG-211(C). ***Preparation for Practice.*** For students preparing for: general practice, Pediatrics, General Surgery, and Internal Medicine. Inpatient and outpatient duties as an intern in Obstetrics and Gynecology. Special lectures in obstetric management and office gynecology with emphasis on good practice techniques. Weight: 8. Every term. *Parker and Staff*

OBG-213(C). ***Research Training.*** For students who desire fundamental training in research methodology in Obstetrics and Gynecology. Rotation through various laboratories. The student, by active participation in investigative projects, learns research techniques and methods applicable to endocrinology, cytogenetics, cytology, bacteriology, chemotherapy, maternal and fetal physiology, toxemia, and others. Weight: 6. Every term. *Parker and Staff*

OBG-215(C). ***The Infertile Couple.*** A didactic and clinical study of infertility in the human. Assigned reading of pertinent medical literature both historical and current is correlated with clinical observation in patients. The student is made familiar with testing techniques and the use of required apparatus and instruments, and participates in the treat-

ment of patients. Weight: 1. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Peete and Christakos*

OBG-217(C). ***Human Embryology.*** Students will study human growth and development *in utero.* In addition to assigned reading and lectures, pertinent gross and microscopic material shall be studied. Incorporates developmental anatomy, physiology, biochemistry and as available, developmental pathology. Weight: 1. Terms 2 and 3: Nov.-March. *Cherny*

OBG-229(C). ***Endocrinology Seminar.*** Sessions with discussion of interesting clinical problems and related clinical and basic research. Weight: 1. Every term. *Christian, McPherson, Lebovitz, and Staff*

OBG-231(C). ***Clinical Reproductive Endocrinology.*** Course for students who desire additional clinical instruction in examination, diagnosis and treatment of obstetric and gynecologic patients with endocrinopathy. Course consists of examination and treatment of patients in the Endocrinology Out-Patient Clinic. Weight: 4. Every term. *Christian, Staff, and Fellows of Endocrine Division*

OBG-233(C). ***Neuroendocrinology.*** Provides laboratory exposure in the methods of neuroendocrine investigation, including stereotoxic stimuli and lesions, isotope investigation, and immunochemistry of the ovulation-inducing hormones, as well as rounds on those endocrine patients pertinent to the topic. Weight: 8. Term 2 or Summer Term: Nov.-Jan., June-Aug. *Christian*

OBG-235(C). ***Cytogenetics.*** An in-depth course in human cytogenetics in which basic techniques of studying human chromosomes are applied to clinical situations. Research in human cytogenetics is also stressed. Weight: 3. Terms 2 or 3: Nov.-Jan., Jan.-March. *Christakos*

Ophthalmology

Professor J. Wadsworth, *Chairman*; Professor Emeritus B. Anderson, Sr.; Clinical Professor Emeritus F. Stocker; Associate Professor B. Anderson, Jr.; Assistant Professor A. Chandler; Clinical Associate S. McPherson, Jr. *Research Professor* M. Wolbarsht; *Research Associate* G. Klintworth; *Instructors* E. Reese, J. Seaber, J. Price; *Clinical Instructors* L. Turner, R. Dawson; *Clinical Assistant* T. Kerns; *Residents* J. Price, D. Driver, N. Young; *Assistant Residents* D. Dephouse, J. Herring, H. Lefler, D. Thier, J. Carruth, M. Singleton, C. Wisor

OPH-201(C). ***Investigative Ophthalmology.*** The student is assigned a project relating to basic science of ophthalmological problems. Technical assistance, sufficient equipment, and laboratory animals are supplied for the completion of the project. The student is expected to attend lectures scheduled for the house staff. Weight: 8. Every term. *Anderson and Wolbarsht*

OPH-203(C). ***General Ophthalmology.*** A clinical preceptorship in which the student will participate in the regular house staff activities, conferences, lectures, patient care, and treatment. Emphasis on the use of specialized ophthalmic apparatus is emphasized. Weight: 8. Every term. *Chandler*

OPH-205(C). ***Medical Ophthalmology.*** The ophthalmic signs and symptoms of systemic disease are presented through patient examination and lectures. Oriented for those students interested primarily in pediatrics, internal medicine, or ophthalmology. Weight: 1. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Chandler and Staff*

OPH-207(C). ***Basic Ophthalmic Sciences.*** Course designed primarily for those students intending to specialize in ophthalmology and will cover optics, ocular anatomy, physiology, pathology, pharmacology, and numerous ophthalmic disease processes. Many outstanding guest speakers. Weight: 1. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Wadsworth, Staff, outside contributors*

OPH-209(C). ***Refraction.*** Emphasis is given on the training of students in basic and advanced knowledge of refraction and the art and science of prescribing glasses for those with normal and subnormal vision. Weight: 8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Chandler*

OPH-211(C). ***Neuro-ophthalmology.*** Experience is provided in application of ophthalmic diagnostic technique toward the diagnosis of central nervous system disease. Clinical case and research review is included. Special instrument utilization is emphasized. Utilized cooperation with divisions of Neurology and Neurosurgery. Weight: 1 or 2. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Anderson*

OPH-213(C). ***Ophthalmic Pathology.*** The student will review all ophthalmic pathology specimens submitted weekly and any pertinent permanent specimens. He will aid in presentation of cases at weekly ophthalmic pathology conferences. Weight: 1. Every term. *Wadsworth and Klintworth*

OPH-215(C). ***Ocular Diseases in Children.*** The study of ocular disease in children includes muscular inbalances, congenital disorders, and neoplastic diseases to acquaint the student with a special pediatric and ophthalmologic phase. Weight: 1. Every term. *Chandler*

SUR-221(C). ***Surgical Specialties and Ophthalmology.*** The student will attend selected conferences of all of the surgical specialties and ophthalmology. Additionally he will select two or three of these specialties in which to concentrate experience (on one service at a time) in the operating rooms, clinics, and wards of the V.A. Hospital. Pathophysiology, diagnosis, and treatment will be emphasized. Weight: 8. Every term. *Silver, Boyarsky, Chandler, Hudson, McCollum, Pickrell, and Wilkins*

Pathology

Professor T. Kinney, *Chairman*; Professors B. Fetter, D. Hackel, B. Trump, J. Vazquez, F. Vogel; Clinical Professor P. Kotin; Professor Emeritus W. Forbus; Associate Professors J. Elchlepp, G. Klintworth, A. Musser, P. Pratt, D. Rowlands, Jr., J. Sommer, B. Wittels; Assistant Professors R. Blaker, P. Burkholder, W. Bradford, A. Martin, Jr., W. Johnston, H. Sage, G. Spooner, M. Vazquez; Associates F. Ginn, F. Graybeal, R. Guerry, N. Ratliff, S. Sahaphong, A. Saladino

Instructor S. Brawley, III; Technical Associates C. Bishop, J. Pickett; Fellows A. Arstila, E. Bossen, D. Graham, J. Hagadorn, H. Jauregui, R. Mathews, J. Parker, J. Wilson; Assistant Residents L. Ayers, F. Bastian, R. Carnighan, J. Gaede, S. Gardanier, W. Gardner, E. Kamstock, H. Leonhardt, E. Palmer, J. Sheehan, M. Quinn, R. Zipf; Interns R. Buddington, J. Daly, D. Denman, F. Elsas, J. Hall, R. Howell, R. Seningen

Required Course

The required course in Pathology (PTH-200) is given during the second term of the first year. The fundamentals of pathology are presented to the student by a correlated study of gross and microscopic material illustrating the structural changes in disease. Lectures developing broad concepts of disease processes are given by the members of the senior staff. Conferences with small groups of students under the guidance of a staff member are scheduled for purposes of more intimate discussion. The emphasis is placed on etiology and pathogenesis of disease and the experimental approach to an understanding of disease. Animal experiments performed either by students or by demonstrators are used to correlate functional and structural changes in disease. The group work is supplemented by weekly conferences involving the class as a whole and dealing with problems presented by current autopsies and with other problems of general importance. Student collaboration in postmortem studies is required. Cases thus studied are presented by the student before the class under the direction of the staff; this takes the form of a clinical-pathologic conference in which each student plays a particular role.

Elective Courses

PTH-201(B). *The Pathologic Basis for Clinical Medicine.* Disease processes will be studied in terms of organ systems, with the intention of enabling students to crystallize the basic processes studied in Pathology 200. Clinical-pathologic correlation will be stressed, utilizing gross and microscopic examples of disease processes, case studies, lectures, and demonstrations. Weight: 4. Term 1: Sept.-Nov. *Hackel and Staff*

PTH-203(B). ***Ophthalmic Pathology.*** This course is designed for students with an interest in ophthalmic diseases and will consist of lectures, seminars, and laboratory sessions. The normal anatomy and embryology of the eye will be reviewed, and the various reactions of the eye to injury will be studied in gross and microscopic specimens. The more common diseases will be considered in detail. Weight: 3. Term 1: Sept.-Nov. *Klintworth*

PTH-209(B). ***Obstetrical and Gynecological Pathology.*** Course is for students oriented toward obstetrics and gynecology. Classroom and laboratory work will include diseases involving pregnant and non-pregnant female genital tract; including exfoliative cytopathology. Practical application of the acquired knowledge will be applied to current material. Weight: 3. Term 4: April-May. *Johnston, Fetter, Amatulli, and Staff*

PTH-223(B). ***Autopsy Pathology.*** Students work directly with one or more members of the Pathology Department. They will first assist at autopsies and then perform a limited number of autopsies under supervision. They will be required to work up these cases with particular attention to correlations with clinical and experimental medicine and to present their findings at staff conferences. Weight: 8. Every term. *Rowlands and Staff*

PTH-225(B). ***Cardiovascular Pathology.*** Clinical-pathologic correlation will be stressed. Cardiovascular disease processes will be studied, reviewing anatomic, embryologic, and physiologic features, and utilizing patient examination and gross and microscopic specimens. Consideration will be given to the electrocardiogram and to the normal and abnormal conducting system. Weight: 2. Term 1: Sept.-Nov. *Hackel and Estes*

PTH-237(B). ***Surgical Pathology.*** This course is designed for the student who wishes more experience in the study of disease. Although the course is entitled Surgical Pathology, this does not imply interest solely in the individual oriented to surgery. Problems in Dermatology, Gynecology, Orthopaedics, General Surgery, Internal Medicine, and other specialties will be considered. The program of study will consist of lectures, demonstrations, and laboratory work. Weight: 4. Term 4: April-May. *Fetter*

PTH-340(B). ***Pathology of the Lymphoid System.*** Normal and abnormal physiology and morphology will be studied with emphasis being placed on the immune response and on neoplasm of the reticuloendothelial system. Laboratories will include preparations and characterization of immunoglobulin as well as examination of pathologic specimens. Weight: 3. Term 2: Nov.-Jan. *Rowlands*

PTH-342(B). ***Special Topics in Pathology.*** Special problems in pathology will be studied with a member of the senior staff; the subject matter will be individually arranged. Weight: 8 per 9 weeks. Every term. *Kinney and Staff*

PTH-344(B). ***Experimental Neoplasia.*** Mechanisms of tumor induc-

tion, natural history of induced tumors, and basic factors affecting response to cancerogenic stimuli. Weight: 3. Term 4: April-May. *Kotin and Staff*

PTH-346(B).** ***Subcellular and Molecular Pathology. This course is designed for students wishing to broaden their knowledge of cellular structure and cellular pathology. Course consists of a series of lectures and seminars discussing the alterations in cellular structure and associated function that accompany cell injury. Weight: 3 per 18 weeks. Terms 1 and 2: Sept.-Jan. *Trump and Sommer*

PTH-348(B). ***Practical Surgical Pathology.*** This course will be in the form of an apprenticeship in which the student will become engaged in the actual preparation and diagnosis of tissue changes. Weight: 8. Every term. *Fetter and others*

PTH-352(B). ***Biochemical Pathology.*** In a series of seminars, the morphology of several disease states will be integrated with their biochemical abnormalities. Utilization of experimental models on resolving the related problems in pathogenesis will be discussed. Disorders in lipid metabolism will be emphasized. Weight: 2. Terms 2 or 3: Nov.-Jan., Jan.-March. *Wittels*

PTH-353(B). ***Advanced Neuropathology.*** A systematic coverage of the topographic aspects, the gross characteristics and the cytologic features of human neuropathologic lesions as they bear upon the pathogenesis of the major diseases and have pertinance to their clinical manifestations. Full consideration to research approach. Weight: 3. Term 1: Sept.-Nov. *Vogel and Klintworth*

PTH-360(B).** ***Enzymatic and Determinative Histochemistry. Theoretical basis of methods for cellular and subcellular localization of chemical constituents. Lectures and laboratory sessions emphasizing modern techniques for tissue preservation and intracellular localization and identification of natural products and enzymes. Weight: 1½ per 9 weeks. Terms 3 and 4: Jan.-May. *Trump and Sommer*

PTH-362(B).** ***Pathology of the Kidney. This course will be a comprehensive study of pathological and clinical features of the glomerulonephritides, nephrotic syndrome, nephroses, and pyelonephritis as well as of metabolic, congenital, and neoplastic renal disorders. Lectures will be supplemented with gross and microscopic specimens, demonstrations, and special library studies. Weight: 2. Term 2: Nov.-Jan. *Burkholder*

PTH-364(B). ***Orthopaedic Pathology.*** Special problems in orthopaedic pathology will be dealt with beginning with a discussion of the development of connective tissue with special emphasis on bone. Bone tumors, metabolic diseases, and traumatic problems will be considered. Weight: 2. Term 4: April-May. *Sommer and Mathews*

PTH-366(B). ***Pulmonary Pathology and Post-Mortem Pathophysiology.*** Emphasis will be on pulmonary pathophysiology infectious, metabolic, environmental and neoplastic diseases, and certain diseases of

unknown etiology (e.g., sarcoid, alveolar proteinosis, etc.). Ventilatory experiments will be done on excised human lungs. Weight: 3. Term 1: Sept.-Nov. *Pratt*

PTH-368(B). ***Neonatal and Pediatric Pathology.*** A systematic study of disease processes involving placenta, infant, and child. Seminars will emphasize pathologic physiology and clinical-pathologic correlations. Laboratory periods will emphasize gross and microscopic material. Designed for students entering clinical pediatrics and pathology. Weight: 3. Term 4: April-May. *Bradford and Martha Vazquez*

PTH-370(B). ***Use of a Central Clinical Laboratory in Laboratory Medicine.*** Emphasis will be on clinical-pathologic correlation between laboratory findings and disease processes. Shortcomings and benefits derived from rational and critical utilization of laboratory procedures will be considered. There will be seminars, tutorials, and laboratory periods covering quality control, "normal values," sources of error, mass screening procedures, battery testing, use of computers, newer procedures, and others. Weight: 4. Term 2: Nov.-Jan. *Musser, Spooner, and Guerry*

PTH-372(B). ***Introduction to Diseases Due to Environmental Agents.*** Due to the prevalence and seriousness of diseases due to environmental agents such as air pollution, etc., this course is an introduction to the pathobiology of disorders caused by physical, chemical, and viable agents. Emphasis is on disease recognition and problem solving. Weight: 2. Terms 1 and 3: Sept.-Nov., Jan.-March. *Vazquez, Kilburn, Pratt, Cate, Kotin, Lee, and Dowell*

Pediatrics

Professor S. L. Katz, *Chairman*; Professors J. Arena, S. Dees, A. McBryde, J. Harris, J. Sidbury, Jr., M. Spach; Professor Emeritus W. Davison; Clinical Professor A. London; Associate Professors J. Boineau, W. DeMaria, M. Kinsbourne, D. J. Lang, F. S. Porter, A. Spock; Assistant Professors G. Brumley, Jr., R. Buckley, R. Canent, Jr., J. Fowler, H. Harris, H. Lowenbach, G. Lyon, Jr., T. Peele, A. Renuart; Assistant Professor Emeritus L. Hohman; Clinical Assistant Professors S. Cornwall, J. King, W. London; Associates J. Jones, E. Long, S. Osterhout; Clinical Associates D. Shearin, G. Watson, B. Webb

Instructors C. Ayers, S. Blumenschein, M. Jarmakani, S. Zirkle; *Clinical Instructors* C. Bailey, J. Brewer, M. Claxton, F. Eastwood, W. Farley, A. Johnson, T. Jones, D. Lockhart, N. Moseley, C. Neal, III, A. Rice, B. Skinner, J. Whatley; *Fellows* A. W. Alexander, C. Ayers, D. Berry, S. Blumenscein, R. R. Burns, T. Graham, Jr., B. F. Hinton, M. Jarmakani, P. Jewett, B. Keenan, T. King, R. Krueger, P. R. Page, H. Risemberg, L. Risemberg, P. Wubbena, Jr., S. Zirkle; *Chief Resident* R. Ford; *Senior*

Residents T. K. Carlton, Jr., B. M. Cruikshank, V. A. Perriello, Jr.; *Junior Assistant Residents* James R. Beshear, H. P. Boggess, V. B. Giordano, A. H. Lubin, R. K. Marshall, Jr.; *Interns* J. W. Clark, P. C. Clark, S. A. Feldman, D. C. Fischer, M. G. Frecking, M. W. Gallagher, J. Kattwinkel, P. C. Latkin, R. D. Mack, C. V. Peery, II, D. C. Pross, J. H. Sightler, J. N. Woody

Required Course

The basic course in Pediatrics (PED-200) consists of seven weeks during the second year, the time being equally divided between clinic and ward services. Students participate in the morning subspecialty clinics, the well baby clinics, and afternoon general medical pediatric clinics, seeing both new and return patients. Conferences are held at the end of the following specialty clinics: hematology, metabolism, neurology, cardiorenal, allergy, convulsive disorders, behavior problems, and well baby care. There are conferences in the general pediatric clinic with informal presentation and discussion of patients. On the wards, the students function as clinical clerks and are assigned patients in rotation. They make daily rounds with the staff. Pediatric nursing procedures are demonstrated by the nursing supervisor. The different subspecialty groups—Cardiology, Hematology, Allergy, Dermatology, and Metabolism—make ward rounds weekly. A joint conference with the senior and resident staff is held twice weekly on topics of pediatric interest, clinical-pathologic discussions, case presentation, and for guest lecturers. There is a daily radiology conference at which the interesting cases are presented and discussed with the radiologist.

Elective Courses

PED-201(C). ***General Pediatrics.*** Student is assigned to the wards, clinics, and newborn nursery according to his interest and goals. In general, he will have an apprenticeship in pediatrics with learning experiences stemming directly from the patient and his problems. Weight: 8. Every term. *Katz and Pediatric Staff*

PED-203(C). ***Pediatric Neurology.*** Student will examine patients with neurological and convulsive disorders in the wards and clinics of Duke Hospital and in the inpatient facilities of the Murdoch Center. Students will be given the opportunity to do research with the staff members. Weight: 8. Terms 2 and 4: Nov.-Jan., March-May. *Kinsbourne and Staff*

PED-204(C). ***Convulsive Disorders, and Mental Retardation.*** Patients in Duke Hospital and Murdoch Center. Screening procedures in the evaluation of patients with mental retardation and/or other neurologic disorders. Medical psychological, social, and educational aspects of mental retardation. Weight: 8. Every term. *Renuart*

PED-209(C). ***Pediatric Endocrinology.*** Student sees clinical endocrine patients by participation in Pediatric Endocrine Clinics. Stress is placed upon application of hormone assay to the diagnosis of endocrine disorders in childhood. Weight: 8. Every term. *Sidbury*

PED-215(C). ***Metabolic Disorders in Children.*** Outpatient and inpatient study of a variety of metabolic disorders. Weight: 8. Every term. *Sidbury*

PED-217(C). ***Pediatric Hematology.*** Includes all aspects of clinical and laboratory pediatric hematology with emphasis on fundamental concepts as related to hematologic disorders. There will be daily ward rounds, a weekly clinic, weekly slide conferences, and weekly seminars, as well as assigned reading. Students will be encouraged to engage in some individual clinical or laboratory project during the period of the course. Weight: 8. Every term. *Porter*

PED-221(C). ***Poison Control.*** Student participates in all functions of the Center. He will be on-call for the treatment of these cases in the Emergency Room or ward and will help compile the monthly data, discussing each report with the Director. Seminars will be arranged with the Director and appropriate members of the university faculty (Pharmacology, Pathology, and Biochemistry). Weight: 2. Every term. *Arena and Osterhout*

PED-223(C). ***Preceptorship in General Pediatrics.*** Several days each week with practicing pediatricians or a group in Durham. Participates in daily newborn-premature rounds at Duke and Watts, conducts well-baby conferences and clinics with emphasis on observations of abnormal pregnancy. Course gives insight into management in atmosphere of pediatric practice. Weight: 6. Terms 2 or 3. Nov.-Jan., Jan.-March. *McBryde and Staff*

PED-225(C). ***Newborn and Premature Infants.*** Students will have patient care responsiblities and experience in the newborn and premature nurseries. Included will be discussions of prenatal hazards, resuscitation, care of the normal newborn and premature infant, and pathological and normal psychological conditions occurring in the newborn and their treatment. Emphasis is placed on the initiation of parent-child relationships and of breast feeding. Weight: 8. Term 3 or Summer Term: Jan.-March. *McBryde and Brumley*

PED-227(C). ***Behavioral Aspects of Pediatric Illness.*** The purpose of this course is to introduce the student to the emotional aspects of sick children. Experience will include the impact on the family as well as the psychic and somatic adjustments of the child. Weight: 3. Every term. *Jones, Enzer, Anderson, Keith, Stedman, and Leventhal*

PED-231(C). ***Clinical Pediatric Cardiology.*** Provides an intensive learning experience in clinical childhood heart disease. Scope: history, physical examination, and special techniques (electrocardiography, phonocardiography, vectorcardiography, cardiac catheterization, and cine-

angiocardiography). Weight: 8. Every term. *Spach, Canent, and Boineau*

PED-233(C). ***Allergy, Clinical Immunology, and Pulmonary Diseases.*** Clinical evaluation and practice in use of methods of diagnosis and treatment of allergy and chest diseases with emphasis on cystic fibrosis. Includes skin and pulmonary function tests, allergen preparation to analyze amount of sweat and serum proteins in immunologic abnormalities. Weight: 8. Every term. *Staff*

PED-235(C). ***Pediatric Oncology.*** The student will attend daily ward rounds, a weekly conference, and seminars. He will also participate in the diagnostic evaluation, care, and treatment of patients with malignant diseases. The majority of the student's time will be spent in an individual clinical or laboratory, investigative effort. The exact nature of this project will be determined by the interest and capabilities of the student. Weight: 8. Every term. *Lyon*

PED-239(C). ***Perinatal Physiology.*** A study of factors during pregnancy, labor, delivery, and the first month of life. Emphasis will be placed on teratogenic influences, abnormal conditions of pregnancy as related to the infant, prenatal pathological conditions adversely afflicting the fetus and newborn, and early management of the infant. Current problems in maternal-fetal relationships will be outlined and experimental approaches introduced. Weight: 8. Terms 1 or 4: Sept.-Nov., March-May. *Brumley and Crenshaw*

NSP-208(C). ***Course in Cognitive Neurology.*** The syndromes arising from focal cerebral damage studied at bedside and by experimental psychological methods. Emphasis is on detailed analysis of disturbed cerebral function (aphasia, agnosia). Comparable methods used to study children with reading and writing difficulties. Instruction will be given in experimental psychological techniques. Students assigned to on-going research projects. Weight: 8. Term: Sept.-Nov. *Kinsbourne*

Physiology and Pharmacology

Professor D. C. Tosteson, *Chairman of Department*

Division of Basic Physiology and Pharmacology: Professor E. M. Renkin, *Head of Division; Laboratory of Cardiopulmonary Physiology:* Associate Professor J. V. Salzano, Chief of Laboratory; *Laboratory of Cellular Endocrinology:* Assistant Professor R. Fellows; *Laboratory of Cellular Physiology:* Associate Professor T. J. McManus; *Laboratory of Membrane Physiology:* Professor D. C. Tosteson, Chief of Laboratory, Assistant Professor P. K. Lauf, Associate C. Franzini Armstrong, Research Associate M. Tieffenberg, Research Associate J. Gutknecht, Research Associate G. Kirk; *Laboratory of Integrative Neurophysiology:* Associate Professor G.

Somjen, Chief of Laboratory, Assistant Professor L. Mendell, Associate C. J. Gerber; *Laboratory of Molecular Physiology:* Professor J. J. Blum, Chief of Laboratory, Associate Professor G. Padilla, Research Associate V. Kahn; *Laboratory of Muscle Physiology:* Professor P. Horowicz, Chief of Laboratory, Research Associates R. Venosa, A. de Hemptinne, A. Ruarte, Assistant Professor C. Armstrong; *Laboratory of Cerebral Physiology:* Associate Professor F. Jöbsis, Chief of Laboratory, Research Associate S. Hersey; *Laboratory of Biochemical Pharmacology:* Professor F. Bernheim, Chief of Laboratory, Associate Professor A. Ottolenghi; *Laboratory of Cellular Neuropharmacology and Toxicology:* Associate Professor T. Narahashi, Research Associates T. Deguchi and M. Yamada; *Laboratory of Synaptic Pharmacology:* Assistant Professor S. Schanberg; *Laboratory of Circulatory Pharmacology:* Professor E. M. Renkin, Chief of Laboratory, Assistant Professor E. Mills, Research Associates M. Kampp, H. Viveros

Division of Engineering Physiology: Professor John W. Moore, *Head of Division, Laboratory of Cellular Neurophysiology:* Professor J. W. Moore, *Chief of Laboratory; Laboratory of Neural Networks:* Assistant Professor H. Wachtel; *Laboratory of Cardiac Pharmacology:* Associate Professor E. A. Johnson, Assistant Professor M. Lieberman; *Laboratory of Reproductive Physiology:* Assistant Professor N. Anderson

Division of Clinical Physiology: Assistant Professor T. Andreoli, *Head of Division and Chief of Laboratory of Renal Transport Processes,* Associate Professor M. Wolbarsht (Ophthalmology), Chief of Laboratory of Visual Physiology, Assistant Professors R. Gibbs (Medicine), *Membrane Physiology,* J. Greenfield (Medicine), *Circulatory Physiology,* J. Kylstra (Medicine), *Respiratory Physiology,* S. Boyarsky (Urologic Surgery), *Renal Physiology,* P. Ove (Medicine), D. Schomberg (Ob-Gyn.), *Reproductive Physiology*

Division of Clinical Pharmacology: Professor R. Bressler, *Head of Division, Laboratory of Cellular Pharmacology:* Associate Professor P. Hochstein, *Chief of Laboratory, Laboratory of Metabolic Pharmacology:* Professor R. Bressler, *Chief of Laboratory,* Assistant Professor Klaus Brendel, *Laboratory of Molecular Pharmacology:* Associate Professor L. Lack, *Chief of Laboratory*

Division of Marine Physiology and Pharmacology: Professor R. Brauer, *Head of Division*

Required Course

The required course in Physiology (PHS-200) consists of lectures, seminars, and laboratory exercises offered by all members of the physiology staff during the fall term of the first year. The core course in Pharmacology (PHS-202) consists of lectures, seminars, and laboratories offered by all members of the pharmacology staff during the second

term of the first year. These courses emphasize those facts and general principles of physiology and pharmacology which all medical students should learn no matter which of the many careers in medicine and the medical sciences they may choose to pursue.

Elective Courses

°PHS-217(B). *Tutorial Seminar in Physiology and Pharmacology.* A study seminar utilizing original papers from the physiological and pharmacological literature. Required, with PHS-219(B), of all third-year medical students who elect to concentrate in this department. Weight: 1 per 9 weeks. Terms 1, 2, 3, and 4: Sept.-Jan., Jan.-May.

°PHS-219(B). *Tutorial in Physiology and Pharmacology.* Guided independent study of original literature and optional laboratory experience. Required, with PHS-217(B), of all third year medical students who elect to concentrate in this department. Weight: 2 per 9 weeks. Terms 1, 2, 3, and 4: Sept.-Jan., Jan.-May.

°PHS-258(B). *Environmental and Underwater Physiology and Pharmacology.* General physiological problems involved in penetration of man into the ocean including confinement, cold, exotic atmospheres, pharmacology, and mechanical aspects of respiration at high pressures, inert gas narcosis, prolonged immersion, and effects of pressure on nerve and contractile tissue. Weight: 9 per 9 weeks. Summer term. *Brauer and Staff*

°PHS-372(B). *Research in Physiology and Pharmacology.* Laboratory training and investigation in various areas of physiology and pharmacology. By individual arrangement only. Weight: 2-8 per 9 weeks. Terms 1 and 2 or 3 and 4, summer term: Sept.-Jan., Jan.-May. *Fellows and Staff*

°PHS-385(B). *Analysis of Physiological Systems.* Several physiological systems will be analyzed in detail using a combination of classical mathematical analysis, model building, and newer analog and digital techniques. Topics to be covered include diffusion processes, steady state and transient kinetics, and cable equations. Weight: 1½ per 9 weeks. Terms 3 and 4: Jan.-May. *Moore and Staff*

°PHS-387(B). *Cardiovascular and Respiratory Physiology and Pharmacology I.* Selected topics in circulation and respiration, including cardiac electrophysiology and mechanics and control of cardiac output and blood pressure. Weight: 1 per 9 weeks. Terms 1 and 2: Sept.-Jan. *Johnson and Staff*

°PHS-389(B). *Cardiovascular and Respiratory Physiology and Pharmacology II.* Selected topics in circulation and respiration, including pulmonary mechanics, regulation of ventilation, circulation, and exchange of materials in pulmonary and systemic capillaries. Weight: 1 per 9 weeks. Terms 3 and 4: Jan.-May. *Salzano and Staff*

*PHS-391(B). ***Neurophysiology and Neuropharmacology I.*** Structure and function of excitable membranes; impulse generation and conduction in different kinds of nerve; effects of pharmacological agents on electrical properties; physiological and pharmacological aspects of synaptic and neuromuscular transmission; biophysics of receptor cells. Clinical applications will be discussed. Weight: 1½ per 9 weeks. Terms 1 and 2: Sept.-Jan. *Narahashi and Staff*

*PHS-393(B). ***Neurophysiology and Neuropharmacology II.*** Physiology of sense organs; sensory coding in the CNS; integration in simple neural nets; motor functions of the CNS; effects of drugs on central neural function; physiological aspects of memory. Clinical applications will be discussed. Weight: 1½ per 9 weeks. Terms 3 and 4: Jan.-May. *Somjen and Staff*

*PHS-397(B). ***Cellular and Biochemical Pharmacology I.*** A comprehensive course on cell-drug interactions with emphasis on mechanisms of action and structure-activity relationships. I. Chemical basis of drug actions; chemotherapeutic agents and antibiotics. Weight: 1 per 9 weeks. Terms 1 and 2: Sept.-Jan. *Ottolenghi and Staff*

*PHS-398(B). ***Cellular and Biochemical Pharmacology II.*** A comprehensive course on cell-drug interactions with emphasis on mechanisms of action and structure-activity relationships. II. Pharmacology of the neuromuscular junction and excitable cells. Weight: 1 per 9 weeks. Terms 3 and 4: Jan.-May. *Ottolenghi and Staff*

*PHS-401(B). ***Metabolic and Developmental Physiology and Pharmacology.*** Cell division and control of the cell cycle; population dynamics; physiology of subcellular particles such as mitochondria, lysosomes, peroxisomes; metabolic regulation with respect to temperature adaptation and to variations in food supply; control of development and differentiation. Weight: 4. Terms 1 and 2: Sept.-Jan. *Blum and Staff*

*PHS-403(B). ***Endocrine and Reproductive Physiology and Pharmacology.*** Current concepts of the synthesis, secretion and mechanism of action of hormones. Hormonal control of pregnancy and parturition with special reference to actions of hormones on myometrical structure and function. Weight: 1½ per 9 weeks. Terms 3 and 4: Jan.-May. *Fellows and Staff*

*PHS-405(B). ***Contractile Processes in Physiology and Pharmacology.*** Cellular basis of activity in skeletal, cardiac, and smooth muscle; submicroscopic structure of muscle and the molecular basis of contraction; electrical and ionic properties of muscle membranes; the problem of electro-mechanical coupling; mechanics and thermodynamics of muscular contraction; biochemical energetics of contraction; control mechanisms used for movement in various animals. Weight: 1½ per 9 weeks Terms 1 and 2: Sept.-Jan. *Horowicz and Staff*

*PHS-407(B). ***Membrane Transport Processes in Physiology and Pharmacology I.*** Chemical composition and ultrastructure of biological mem-

branes, physical chemistry of transport processes, role of such processes in physiology of individual cells, integration of transport processes to produce movement of molecules across epithelia, e.g., amphibian skin and bladder, cornea, etc., and organs specialized for transport e.g., gastric and intestinal mucosa, liver, kidney. Weight: 1 per 9 weeks. Terms 1 and 2: Sept.-Jan. *Tosteson and Staff*

PHS-409(B).** ***Membrane Transport Processes in Physiology and Pharmacology II. Chemical composition and ultrastructure of biological membranes, physical chemistry of transport processes, role of such processes in physiology of individual cells, integration of transport processes to produce movement of molecules across epithelia, e.g., amphibian skin and bladder, cornea, etc., and organs specialized for transport e.g., gastric and intestinal mucosa, liver, kidney. Weight: 1 per 9 weeks. Terms 3 and 4: Jan.-May. *Tosteson and Staff*

Psychiatry

Professor E. Busse, *Chairman*; Professors I. Alexander, K. Back, B. Bressler, R. Carson, B. Dai, C. Eisdorfer, J. Fowler, M. Lakin, H. Lowenbach, G. Maddox, J. McKinney, W. Obrist, J. Rhoads, W. Wilson; Professor Emeritus L. Hohman; Associate Professors J. Altrocchi, L. Borstelmann, M. Breslin, E. Clifford, H. Crovitz, B. Feather, I. Gehman, R. Green, H. Harris, P. Hein, F. Hine, A. Krugman, C. Llewellyn, E. Palmore, J. Reckless, G. Silver, L. Thompson, A. Verwoerdt; Assistant Professors W. Anderson, M. Baldwin, K. Barclay, E. Crovitz, E. Ellinwood, D. Fowler, D. Gianturco, J. Giragos, M. Huse, J. Jackson, D. Johnson, J. Jones, C. Keith, I. Kremen, M. LaBarre, D. Leventhal, D. Mayfield, C. Neville, Z. Pauk, E. Pfeiffer, K. Rockwell, M. Short, W. Shows, R. Tomlinson, H. Wang, M. Wertz, W. Zung; Assistant Clinical Professor P. Irigaray; Associates M. Amaya, H. Coppedge, G. Doss, E. Harkins, B. Hubbard, G. Polansky, E. Reilly, A. Sagberg, P. Walker, S. Workman

Instructors E. Crocker, T. Fox, J. Gallemore, T. Haizlip, F. Harrison, E. Heath, A. Jackson, H. Johnson, R. Kerr, M. Leventhal, J. Mallory, R. Martin, J. McNiel, J. Nunnally, N. Pfeiffer, M. Reedy, P. Schreiber, S. Singleton, P. Smith, M. Soloway, K. Thompson, A. Whanger, J. Williams; *Research Associates* F. Jeffers, R. Mishriky, F. Wilkie; Assistant D. Heyman; *Consultant* W. LaBarre; *Fellows* L. Bourque, F. Delse, G. Fillenbaum, M. Fisher, C. Guajardo, S. Hastings, M. Headrick, A. Klein, G. Marsh, J. Martin, J. McNiel, D. Peak, G. Preston, J. Rees, C. Rich, R. Schlossel, M. Troyer, F. Shah, L. Vanegeren, A. Whanger; *Chief Resident* J. Gallemore; Residents E. Allen, J. Bonner, L. Cancellaro, R. Demas, A. Derdeyn, R. Doyle, A. Grant, B. Hydrick, C. Patterson, D. Robinson; *Assistant Residents* D. Allen, G. Brown, A. Carter, S. Davis, R. Fisher, R.

Friedel, J. Gergen, R. Kennan, S. Lee, L. Lipsius, B. Milgram, J. Nash, C. Norton, R. Ray, W. Scarborough, J. Shalley, M. Volow; *Psychology Interns* R. Boyarsky, W. Gentry, J. Mancusi, T. Maquire, R. Mihalick, S. Nowicki, J. Tyler, M. Tyler

Required Courses

Human Behavior and Psychiatry

In addition to required and elective courses in clinical psychiatry this Department offers, through its Division of Human Behavior, course work in the biological and behavioral sciences which form the bases of psychiatry and the psychological aspects of medicine.

During the first year, 60 hours are devoted to Human Behavior (PSY-200). A lecture series introduces the student to the concepts, techniques, and data of the various sciences most relevant to an undersanding of human behavior, thus providing a multifaceted approach to that understanding. Lecturers from the fields of behavioral Psychology, Psychiatry, Pediatrics, and Sociology discuss behavior from the points of view of heredity and constitution; the central and autonomic nervous systems; inner emotional conflicts and interpersonal relationships; learning, cognition, and perception; and relationships between the individual and his family, the social institutions, and his subculture and culture. Both functional and developmental points of view are presented and, in connection with the latter, stages in the development of the individual personality are traced. Wherever possible, relationships between the various approaches to human behavior are stressed. Concurrent with the lectures, a series of small group meetings provide, through the interviewing of patients and group discussion, opportunity for the further assimilation of the lecture material and its application to specific examples of behavior. The small groups also provide opportunities to introduce effective techniques of human interaction and observation of the primary data of human behavior as well as methods of recording and interpreting these observations. In both the didactic and small group laboratory portions of the course, emphasis is placed upon the complementarity of the biological and psychosocial approaches to human behavior and the relevance of such a combined approach for the practice of medicine.

The required second year course in Clinical Psychology (PSY-201) is for seven weeks. The student assumes limited responsibility, under supervision, for diagnosis and treatment of patients on the psychiatric wards, in the psychiatric outpatient clinic, and (through the psychosomatic consultation services) on the non-psychiatric wards of the hospitals. Supervision is directed toward two principle areas. The first is the significant application of concepts of diagnosis, psychopathological formulation, and

therapy. Concepts in these areas are drawn from both the descriptive-organic-directive and the psychoanalytic-psychosocial-psychotherapeutic contributions to current psychiatric thought. Secondly, supervision is aimed at further developing interpersonal techniques of sensitive observation and therapeutic use of the self. Emphasis is placed upon concepts and techniques applicable to all patients as well as those specifically designated *psychiatric.* Didactic instruction includes seminars on the principle neurotic conditions (symptomatic, characterological, and psychophysiological), the major psychoses, emotional problems of childhood, the somatic therapies, psychological testing, and introductory electroencephalography. In addition to rounds and case conferences, students are encouraged to observe psychotherapy and participate in supervised psychotherapeutic encounters whenever appropriate situations can be provided.

Elective Courses

PSC-202(B). ***Philosophy of Science and Behavioral Sciences.*** Survey of current theories of knowledge, particularly as they relate to the special complex problems of empirical meaning, objectivity, measurement, and verification in studies of human behavior. Consideration is also given to the mind-body problem. Weight: 1. Term 2: Nov.-Jan. *Hine*

PSC-203(B). ***Experimental Design in Behavioral Research.*** Discussion of research strategies in behavioral and social sciences. Particular emphasis will be upon the design analysis and criticism of experimental design as it applies to behavioral research with a focus upon the validity of research findings and their generalizibility. Weight: 1. Term 3: Jan.-March. *Carson*

PSC-213(B). ***Personality Development I: Birth to Adolescence.*** Human development from pregnancy through psychological and biological approaches. Weight: 2. Terms 1 and 3: Sept.-Nov., Jan.-March. *Harris, Borstelmann, and Clifford*

PSC-214(B). ***Personality Development II: Adolescence to Old Age.*** The changes in human development and personality due to biologic maturation and the influences of experience will be covered with opportunities to observe types of personalities reacting to various settings. Weight: 2. Terms 2 or 4: Nov.-Jan., March-May. *Busse, Peak, and Staff*

PSC-215(B). ***Comparative Personality Theory.*** An examination of models of human functioning from Freud to the present. Topics will include examples from psychoanalytic, interpersonal, field theoretical, and behavioristic approaches. Weight: 1. Term 3: Jan.-March. *Crovitz and Krugman*

PSC-216(B). ***Intelligence and Cognition.*** Description of role of intelligence and cognition in behavior. Theories of intellectual functioning. Introduction to measurement of abilities. Effects of genetics, experience,

age and illness upon intelligence. Weight: 2. Term 4: March-May. *Carson and Staff*

PSC-237(B). ***Language and Communication.*** A seminar in verbal and non-verbal communication including interviewing and interpersonal behavior. Weight: 1. Term 1: Sept.-Nov. *Green, Hein, and Staff*

PSC-250(B). ***The Neural Substrates of Perception and Cognition.*** An introduction to the neurophysiological basis of perception and thinking. Sensory systems, attention and appetitive systems, cerebral cortical function and programing as inferred from lesions in humans and from animal experimentation will be reviewed. Weight: 1. Terms 1 or 2: Sept.-Nov., Nov.-Jan. *Ellinwood*

PSC-289(B). ***Autonomic Conditioning.*** Analysis of conditioning of autonomic nervous system functioning in man. Weight: 1. Term 2: Nov.-Jan. *P. Hein*

PSC-291(B). ***Psychophysiologic Methods in Animals and Humans.*** Introduction to laboratory methods of psychophysiology and survey of approaches. Weight: 2. Term 2: Nov.-Jan. *P. Hein*

PSC-293(B). ***Learning Theory and Psychopathology.*** An understanding of learning theory as applied to human behavior and its normal and pathologic aspects. Weight: 2. Term 3: Jan.-March. *Feather*

PSC-295(B). ***Anatomical Basis of Mind.*** This course will review basic neuroanatomy with special reference to systems as they relate to human behavior. This course will include gross macro and microneuroanatomy as well as the ultrastructure of the brain. Weight: 2. Term 1: Sept.-Nov. *Short*

PSC-323(B). ***Basis of Behavioral Pharmacology.*** Fundamental pharmacology of centrally acting drugs that influence behavior. Emphasis on basic pharmacologic acting of drugs as they influence biochemical and neurophysiological function of nervous system. Is prerequisite for Research Preceptorship in Clinical Psychopharmacology PSY-234(C) Weight: 2. Term 4: March-May. *Wilson, Reilly, Ellinwood, Short and Mayfield*

PSC-230(C). ***Clinical Research Preceptorship in Community Psychiatry.*** The course will focus upon the evaluation of such community mental health problems as alcoholism and suicide and mental illness and the clinical techniques used to correct these conditions. Students will be assigned to one of the staff for their field experience. Weight: 3 Every term. *Eisdorfer, Altrocchi, Maddox, B. Fowler, Lowenbach Shows, and Giragos*

PSC-234(C). ***Clinical and Experimental Psychopharmacology.*** Experience in one or more areas of psychopharmacology including clinical use of drugs, human experimental psychopharmacology and animal neuropharmacology. Lectures covering mechanisms of action and clinical use of psychoactive drugs. Weight: 3. Term 3 or summer term: Jan.-March, June-Aug. *Mayfield, Ellinwood, Short, and Wilson*

PSC-240(C). ***Inpatient Psychiatry: Environmental and Somatic Therapy (A).*** Intensive clinical course—Diagnosis, treatment and management methods. Patient care responsibilities including management of ward milieu and experience with somatic, individual and group psychotherapy. Weight: 8. Every term. *Green and F. Hine*

PSC-241(C). ***Inpatient Psychiatry: Environmental and Somatic Therapy (B).*** Less individual patient responsibility than PSC-240(C). Diagnosis, psychodynamics, and treatment emphasized. Weight: 6. Every term. *Green and F. Hine*

PSC-242(C). ***Inpatient Psychiatry: Environmental and Somatic Therapy (C).*** Selected patient conferences and didactic lectures. Weight: 3. Every term. *Green and F. Hine*

PSC-243(C). ***Principles and Practice of Outpatient Psychiatry.*** Training and experience in recognizing and treating emotional disorders in outpatients. Supervised experience with patients having emotional problems commonly seen in medical practice. Training to include theory and techniques of brief psychotherapy, crisis intervention, supportive psychotherapy, and utilization of community resources. Weight: 3-8. Every term. *Fowler, Llewellyn, Rockwell, and Giragos*

PSC-245(C). ***Psychosomatic Medicine.*** The student is given the opportunity of working with patients with psychosomatic illness under the direction of members of psychosomatic staff. Additional experience in general psychiatry on an inpatient and outpatient basis is available to the student if he so wishes. Weight: 3-8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Reckless, Breslin and Short*

PSC-251(C). ***Community Psychiatry and Mental Health.*** The student will accompany physicians and others in the mental health field to community centers and will meet with various agency groups. They will be assigned a lab project in an area of community study. Weight: 4-8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan. Jan.-March, March-May. *Llewellyn, Eisdorfer, Maddox, Rockewell, Giragos, Fowler, Altrocchi, and Lowenbach*

PSC-253(C). ***Principles and Practice of Group Psychotherapy and Psychodrama.*** An observation on the practice of group psychotherapy and psychodrama with outpatients manifesting neurotic, psychosomatic, psychotic and behavior disorders. Post session supervision and discussion follows each group treatment. Weight: 1-3. Terms 2, 3, or 4: Nov.-Jan., Jan.-March, March-May. *Reckless and Staff*

PSC-255(C). ***Marriage Counseling in Medical Practice.*** The principles and practices of marriage counseling will be taught. Required reading assignments will be made. The non-medical resources of marriage counseling will also be presented. Sexual problems commonly occurring in marriage will be discussed. Weight: 1. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Llewellyn, Breslin, and Pfeiffer*

PSC-257(C). ***Schizophrenia: Research and Clinical Aspects.*** This lit-

erature seminar will reveiw theories of the etiology of schizophrenia, including theories at the biological, individual psychodynamic, communication and family dynamic levels. Concepts of management and treatment of the schizophrenic person will also be reviewed. Weight: 1. Term 3: Jan.-March. *Tomlinson and F. Hine*

PSC-259(C). ***Clinical Neurophysiology (EEG).*** Didactic and tutorial training in clinical neurophysiology as it relates to diseases of the central nervous system. The technical and interpretative aspects of electroencephalography are taught. Weight: 3. Every term. *Wilson*

PSC-261(C). ***Practice of Psychological Assessment Techniques.*** Demonstrations and practice in the administration and in interpretation of psychological assessment techniques with emphasis on the potential utility of these techniques to physicians. Weight: 1. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Huse and Staff*

PSC-267(C). ***Clinical Child Psychiatry.*** Survey of child and adolescent psychopathology including diagnostic treatment and consultative approaches. Conferences and seminars augment closely supervised clinical experiences. Weight: 3-6. Terms 1, 2, 3, or 4 *or* Terms 1 and 2 *or* Terms 3 and 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May, Sept.-Jan., Jan.-May. *H. Harris*

PSC-271(C). ***Alcohol and Drug Abuse I.*** The factors which influence the various patterns of abuse and their treatment will be reviewed, including cultural and subcultural attitudes, family values and patterns of interaction, personality of the abuser, and individual pharmacological properties of each drug. Weight: 1 per 9 weeks. Terms 3 and 4: Jan.-May. *Ellinwood, Mayfield, and Maddox*

PSC-272(C). ***Alcohol and Drug Abuse II.*** Offers an opportunity for students interested in neuropharmacology of drug and alcohol abuse to learn laboratory and research techniques and to follow certain patients. Weight: 3. Terms 3 or 4: Jan.-March, March-May. *Ellinwood, Mayfield, and Maddox*

PSC-297(B). ***Biochemistry of Behavior.*** This course will cover the chemical structure of nervous tissue, neurohumors, hormonal regulation, psychoactive agents, biochemical genetics, and biochemistry of behavior. Weight: 2. Term 3: Jan.-March. *Short*

PSC-299(B). ***Preceptorship in Behavioral Science.*** Opportunity for the student to work closely with a member of the faculty in an area of mutual interest with emphasis upon research. Weight: 1-8. Every term. *Eisdorfer and Staff*

PSC-301(B). ***Psychophysiology Seminar.*** Ongoing seminar in special topics in autonomic nervous system research. Weight: 1. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, April-May. *P. Hein and Staff*

PSC-303(B). ***Child Development and Mental Retardation.*** A consideration of early child development from the psychological point of view, focusing on mental retardation and other areas of exceptionality. Im-

plications for medical practice, education, research and program development. Weight: 2. Terms 1, 3, or 4: Sept.-Nov., Jan.-March, April-May. *Harris and Staff*

PSC-305(B). ***Social and Cultural Aspects of Illness.*** Seminar on medical-social roles in community and hospital. Topics include physician-patient relationship; epidemiology of illness and health services in terms of ecology, social stratification, race, life cycle. Students wishing further work in one particular topic, such as Negro subculture or gerontology, should take PSC-299(B), specifying particular interest. Weight: 3. Term 4: March-May. *Maddox, Palmore, and Jackson*

PSC-315(C). ***Pathology of Perception and Thinking.*** The clinical disorders of perception and thinking will be presented. The neurological, psychiatric, psychological and psychophysiological examinations that best elicit these disorders will be demonstrated. Concepts from neurology, psychiatry and psychology will be compared and integrated. Weight: 2. Term 3: Jan.-March. *Ellinwood*

PSC-317(C). ***Forensic Psychiatry.*** Seminar course covering areas of overlap between psychiatry and law. Criminal responsibility; mental competency; commitment procedures; testamentary capacity; family law; expert witness procedures; legislative and theoretical issues. Weight: 1. Term 1: Sept.-Nov. *Pfeiffer*

PSC-321(B). ***Neurophysiology and Behavior.*** Fundamentals of brain and spinal cord physiology as they relate to function of the mind. Attention is paid to consciousness, intellect, emotion, and psychomotor activity. Weight: 2. Term 2: Nov.-Jan. *Wilson*

PSC-327(C). ***Lectures in Clinical Psychopharmacology.*** The animal behavioral, human experimental, neurophysiological, and biochemical mechanisms of action and the clinical use of psychoactive drugs. This course will cover the ataratic, hypnotic, stimulant, antidepressant, and hallucinogenic groups of drugs. Weight: 1. Every term. *Mayfield, Ellinwood, Short, and Wilson*

PSC-329(C). ***Family Unit, Structure, Pathology, and Therapy.*** This course emphasizes, the nature of the family unit, involving usual and abnormal pathology. Its recognition and reversal. Weight: 1. Terms 3 or 4: Jan.-March, March-May. *Lowenbach*

PSC-331(C). ***Dynamic Approach to Medical Problems Based on Psychoanalytic Theory.*** This course will be structured that the tenets and ideas of psychoanalytic psychology will be applied to the ancillary part of the total part of the management of patients on medical and surgical ward (a certain kind of psychosomatic approach). Weight: 2-4. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May.

PSC-333(C). ***Psychiatric Theory and Practice and the Therapeutic Community.*** Principles and practice of psychiatric diagnosis and treatment. Instruction in psychiatric interviewing techniques. Psychological testing theory and administration. Theory of and supervised experience

in individual psychotherapy, group psychotherapy, psychodrama, oc cupational therapy, recreational therapy, and total management of th patient. Board and lodging for single and married students furnished Weight: 9. Every term. *Neville, Workman, Mallory, and Johnson*

PSC-335(C). ***Research Preceptorship in Clinical Psychiatry.*** Thi course allows the student to work on a research project in clinical psy chiatry with selected members of the psychiatric staff. Weight: 3-8 Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May *Clinical Staff by arrangement*

PSC-337(C). ***Geriatric Psychiatry.*** The medical and clinical aspects o geriatric psychiatry with emphasis on diagnosis and management of geriat ric patients in a variety of treatment facilities. Course includes attend ance at scheduled conferences and supervised review of geriatric litera ture. Weight: 3-8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March March-May. *Busse, Peak, Verwordt, Wong, Palmore, and Staff*

PSC-339(C). ***Preceptorships in Clinical Psychiatry.*** An advance training program in the preceptorship style for the recognition, diagnosis prognosis and treatment of psychiatric disorders. Experience will b mainly with inpatients and patients seen in consultation from other ser vices but may include outpatients as well. Weight: 3-8. Terms 1, 2, 3 or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May.

Radiology

Professor R. Lester, *Chairman*; Administrator S. Paine; *Radiodiagnosis Division:* M. P. Capp, Director; Professor, G. Baylin, E. Van Epps; As sociate Professors W. Barry, J. Goree; Assistant Professors J. Chen, J Jimenez, R. Rice; Associates J. Gehweiler, M. Jarmakani, S. Winkler Instructors R. McConnell, A. Robinson, J. Williams; *Radiation Therapy Division:* Associate Professor P. Cavanaugh, Director; Professor J. Evans Associate Professor B. Worde, Associate, H. Connell; Instructor, W. Ben nett, Research Associate Raymond U.; *Nuclear Medicine Division:* As sociate Professor J. Goodrich, Director; Assistant Professor R. Gorten C. Harris; Associates R. Wilkinson, A. Wyrick; Instructor, H. Barnett *Radiobiology Division:* Associate Professor A. Sanders, Director; Assistan Professor W. Currie; Associate G. Hill; *Radiation Physics Division:* As sistant Professor A. McCrea; *Radiation Technology:* Assistant Professor J Cahoon, Chief Technician, J. Miller; *Clinical Staff:* Associate Clinical Pro fessor O. Doyle; Assistant Clinical Professors R. McClelland, D. Monson W. Sprunt; Clinical Associates G. Gray, J. Sherrill, G. Schlaseman, T Thurston, J. Wear; *Radiation Safety:* Associate C. Knight

Residents N. Abramson, J. Atchison, J. Buchanan, S. B. Gerber, R. Gifford R. Goebel, D. Grode, L. Grundy, J. Haslam, T. Hetherington, S. Martinez

L. Mazzochi, G. McCord, E. McCormick, J. Poklepovic, A. Price, J. Ralsten, J. Sexton, J. Smith, L. Southworth, R. Thompson, R. Thompson, T. Thompson, T. Vance, T. Vauchan, J. Carranza

During the first year, radiology is not taught as a separate course but is correlated in many of the established teaching programs. In the second year, Radiology (RAD-200) is taught in a two-hour seminar each week throughout the year. Therapeutic Radiology and Nuclear Medicine are taught in a similar manner.

Elective Courses

RAD-223(B). ***Radioisotope Methods and Techniques in Biomedical Research.*** Introduction to principles and practices in biomedical research applications of radioactive materials: Fundamentals of radiosensitivity, nuclear instrumentation, counting methodology, statistics of counting, liquid scintillation counting, external standard ratio, sample preparation. Weight: 3. Term 1: Sept.-Nov. *Sanders and Currie*

RAD-225(B). ***Methods and Techniques of Radiobiology—Subcellular.*** To acquaint student with current research, techniques, and methodology in cell and subcellular radiobiology. Weight: 8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, April-May. *Sanders, Currie, Hill, and Evans*

RAD-227(B). ***General Radiobiology.*** Basic fundamentals essential to an understanding of biological effects of ionizing radiation. Major sections include radiation physics, radiation dosimetry, target theory and activated water theory in radiation damage, oxygen effect, radio-biochemistry, subcellular effects, tissue radiosensitivity, general radiation syndrome. Weight: 2. Term 3: Jan.-March. *Sanders, Currie, Hill, Evans*

RAD-207(C). ***Pediatric Radiology.*** A specialized program of instruction and participation in the wide variety of radiographic examinations in the pediatric age group. Special correlation of these examinations to the problems of specific diagnosis and patient care will be made. Weight: 4. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Lester, Capp, and Chen*

RAD-209(C). ***Clerkship in Neuroradiology.*** A specialized program of detailed instruction in Neuroradiology. The program includes participation in the performance and interpretation of a variety of examinations including carotid arteriography, retrograde brachial arteriography, pneumoencephalography, myelography and others. Weight: 4. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Goree, Jimenez, and Staff*

RAD-211(C). ***Clerkship in Cardiovascular Radiology.*** A specialized program of detailed instruction in cardiovascular radiology. The program includes performance and interpretation of examinations including

visceral and peripheral arteriography, angiocardiography, venography, lymphangiography, and others. Weight: 4. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Johnsrude*

RAD-213(C). ***Gastrointestinal Radiology.*** This clerkship is designed to provide a comprehensive course in gastrointestinal radiology. It will provide opportunity to observe and perform examinations; and will include emphasis on surgical pathologic correlation with the radiographic findings. Weight: 4. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Rice*

RAD-215(C). ***Clinical Radiation Therapy.*** Approximately two-thirds of new cancer patients seen at the medical center are concentrated within the Division of Radiation Therapy. The course mainly provides an opportunity to observe a wide spectrum of clinical behavior in new patients, follow-up clinic, and in cases undergoing treatment. The course is aimed particularly at students leaning toward gynecology and otolaryngology as well as general surgery. Weight: 8. Every term. *Cavanaugh, Worde, Evans, Raben, Connell, and McCrea*

RAD-229(C). ***Basic Radiology Clerkship.*** This clerkship provides a nine week exposure to general radiology, including radiation therapy. Students are given some flexibility in selection of subspecialty assignments but emphasis is on a broad view of the specialty of radiology. Weight: 8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Lester and Staff*

RAD-231(C). ***Clinical Nuclear Medicine.*** The course involves study of the basic principles of radionuclide scanning, monitoring dynamic functions, and measurements of body pools and spaces and how these procedures can be properly used to diagnose and follow the course of numerous medical disorders. Weight: 5. Terms 2 or 4: Nov.,-Jan., March-May. *Gorten*

SUR-230(C). ***Seminar in Urology and Uroradiology.*** Seminar and clinical course by members of the staff in urology and radiology to provide an introduction to the spectrum of urologic diseases and surgery, amplified by uroradiologic diagnostic methods. Clinical problems will be stressed, including endocrinopathies, pediatric urology, obstructive uropathies, renovascular hypertension, and urologic malignancies. Informal teaching seminars will be followed by ward and clinic rounds with demonstrations of uroradiologic methods. Weight: 2. Every term. *Glenn, Lester, Urology and Radiology Staff*

Surgery

Professor D. Sabiston, *Chairman*
Division Chiefs: (Urologic Surgery) Professor J. Glenn; (Orthopaedic Surgery) Professor J. Leonard Goldner; (Otolaryngology) Professor W.

Hudson; (Neurosurgery) Professor G. Odom; (Plastic and Maxillofacial Surgery) Professor K. Pickrell; (Thoracic Surgery) Professor W. Sealy; (General Surgery) Professor W. Shingleton; (Anesthesiology) Professor S. Dent; (Dentistry) N. Ross

Professors D. Amos, W. Anlyan, L. Baker, J. Beard, S. Boyarsky, F. Clippinger, E. Day, J. Dees, N. Georgiade, K. Grimson, W. Peete, R. Postlethwait, G. Quinn, J. Semans, B. Woodhall, W. Young; Professors Emeritus E. Alyea, D. Hart; Associate Professors F. Bassett, R. Bonar, E. Clifford, M. Dillon, P. Ebert, R. Gregg, K. Hall, B. Hills, D. McCollum, B. Nashold, D. Silver, W. Smith, D. Stickel; Associate Clinical Professors J. Davis, T. Takaro; Assistant Professors E. Anderson, R. Chen, A. Ferrari, P. Kenan, N. Kirshner, P. Labay, M. Mahaley, J. Malin, F. Mauney, R. Mladick, S. Patterson, H. Seigler, I. Talton, V. Vartanian, R. Wilkins; Assistant Clinical Professors E. Bugg, R. Coonrad, G. Ferguson, J. Glasson, L. Mason, C. Patterson, L. Roberts, M. Schiebel, S. Scott; Associates W. Abbey, D. Beard, R. Benway, P. Breen, A. Craddock, B. King, J. King, F. Knobeloch, R. Massengill, B. Sapp, R. Snider; Clinical Associates M. Bourgeois-Gavardin, W. Hollister, S. Kapoor, J. Kouns, E. Lloyd, T. Pope, N. Schupper, E. Staub; Research Associates R. Fritz, R. Georgiade, L. Gottsch, A. Langlois, J. Riman, L. Sverak, A. Thiele; Clinical Lecturers D. Boyer, G. King, L. Meyer, G. Miller, O. Miller, R. Musgrave, W. Roberts, F. Stelling; Instructors M. Campbell; Clinical Instructors G. Carver, J. Coppridge, C. Dart, H. Deaton, S. Hobart, J. Hughes, W. Inabnet, G. Lazenby; Fellows C. Chen, K. Chen, H. Iwahashi, M. Yokoyama, F. McGregor, E. Gonzales, H. Kim, D. Soderdahl; Interns D. Barker, J. Curtis, R. Davis, W. Ellis, G. Fletcher, J. Goodnight, N. Green, F. Hambrecht, J. Hammon, J. Hart, W. Hines, J. Hollingsworth, F. Hutchinson, T. Kjerulf, G. Maroulis, D. Melvin, R. Perryman, G. Poehling, E. Polotwicz, R. Ruderman, C. Taft

Required Courses

The required course in Surgery (SUR-200) is given in Year 2 and consists of a seven-week term for each student. This constitutes the "core" course in surgery and during this time the primary aim is the presentation of those *concepts* and *principles* which characterize the discipline of surgery. Emphasis is placed upon the basic and objective studies which form the foundation of surgical diagnosis and treatment. Stress is placed upon subjects which have their foundation in objective laboratory and clinical documentation. These topics are presented in informal seminar three times weekly and include antisepsis and surgical bacteriology, wounds and wound healing, inflammation, fluid and electrolyte balance, shock, the metabolic response to trauma, the biology of neoplastic disease, gastrointestinal physiology and its derangements, blood coagulation, thrombosis, and embolism.

The students are divided into small groups and each is assigned a Senior Surgical Instructor. Rounds at the bedside are made three times weekly with the Senior Instructor. Each morning the students attend clinical rounds with the Resident Staff for discussion of practical surgical diagnosis and therapeutics. A one-hour session is devoted daily to a Surgical Specialty demonstration which includes conferences concerning Anesthesia, Neurosurgery, Orthopaedics, Otolaryngology, Plastic Surgery, and Urology. Students are assigned patients on the surgical wards for diagnosis and management. *Sabiston and Surgical Staff*

A second required course, Emergency and Disaster Surgery (SUR-337), is given during the second year for one week. The course is designed to teach basic principles of emergency medicine, and its goal is to prepare the student to handle properly most medical and surgical emergencies. Included in the course are lectures and coordinated laboratory exercises which stress the pathophysiologic derangements that occur during the emergencies and which indicate the management of the derangements. *Silver and Bassett*

Elective Courses

SUR-201(C). ***Advanced Clinical Surgery.*** The course is designed to teach the basic principles and concepts of surgery, including surgical physical diagnosis and diagnosis of the acute abdomen. This course will cover the diseases of the gastrointestinal tract, endocrine organs, proctology, and surgery of the hernia. Weight: 8. Term 1 or 3: Sept.-Nov., Jan.-March. *Shingleton and Peete*

SUR-203(C). ***Survey of Pulmonary, Esophageal, and Cardiovascular Surgery.*** Course is a continuation of the students' clinical clerkship with emphasis on thoracic disease. The student will be assigned patients and will be responsible for the clinical history, physical examination, and the preoperative studies. He will scrub at the time of operation, and will assist in his postoperative care. Attendance is required at daily rounds with the staff. Assigned reading in this field will be required of each student. Weight: 8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Sabiston, Sealy, Brown, Young, and Resident Staff*

SUR-206(C). ***Surgical Aspects of Thoracic Disorders.*** The student will be assigned to the Thoracic Service where he will participate in the diagnosis, surgical treatment of patients with pulmonary, esophageal, and cardiac disorders. He will make rounds with the senior and house staff, attend conferences in the department, and meet at intervals with the senior staff concerning special problems in this field. Weight: 6. Every term. *Young and Sealy*

SUR-207(C). ***Surgical Cardiology.*** First will come the introduction into the techniques of diagnosis, and two periods each week will be spent either in the pediatric or medical cardiovascular laboratory assisting

in the clinical evaluation of patients. The student will be taught the basic concepts of extracorporeal circulation by assisting in the operating room with the conduction of open heart operations. In the second part clinical studies will be afforded by examination and follow-up of the patients. Weight: 8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Sabiston, Sealy, Young, and Resident Staff*

SUR-208(C). ***Rehabilitation Medicine.*** Utilization of rehabilitation techniques are applied to chronic patient care. Work with paramedical personnel in the over-all therapy and discharge planning of severely disabled patients and become familiar with public and private resources. Course is flexible and can be tailored for specific need and requirement of student. Weight: 1-6. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Gregg and Staff*

SUR-213(C). ***Homotransplantation of Organs.*** This course will acquaint students with certain basic immunological and surgical concepts of transplantation of tissues and organs, particularly homotransplantation. The concepts will be illustrated in part by reference to the literature and in part by case study of current renal transplant patients. Weight: 2. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Stickel, Seigler, and Amos*

SUR-215(C). ***Surgical Disease of Blood Vessels and Lymphatics.*** This course will acquaint students with newer techniques in the diagnosis and management of peripheral vascular disease, including diseases of arteries, veins, and lymphatics. The pathogenesis, natural history, and preferred methods of treatment of the vascular disorders will be stressed. Weight: 1. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Silver*

SUR-217(C). ***Surgery of Trauma.*** This course teaches the principles and practice of diagnosis and management of the acutely traumatized patient. Students will be assigned to the Duke Hospital emergency and recovery rooms and will assist in diagnosis and treatment of assigned patients with acute injuries. Weight: 4. Term 1 or 3: Sept.-Nov., Jan.-March. *Shingleton and Peete*

SUR-219(C). ***Advanced General and Thoracic Surgery.*** Special attention will be given to those subjects in surgery common to all medical practices. Patients will be assigned to the students. The major emphasis will be on physiologic and pathologic changes, diagnosis, and the indications for operation. Weight: 8. Every term. *Mauney, Silver, Dillon, Seigler, Stickel, and Postlethwait*

SUR-221(C). ***Surgical Specialties and Ophthalmology.*** The student will attend selected conferences of all of the surgical specialties and ophthalmology. Additionally he will select 2 or 3 of these specialties in which to concentrate experience (on one service at a time) in the operating rooms, clinics, and wards of the V.A. Hospital. Pathophysiology,

diagnosis, and treatment will be emphasized. Weight: 8. Every term. *Silver, Boyarsky, Chandler, Hudson, McCollum, Pickrell, and Wilkins*

SUR-223(C). ***Medical and Surgical Renal Disease.*** Experience is offered in diagnosis and management of surgical diseases of the urinary tract and medical renal diseases. Participation in special urologic clinics and exposure to hemodialysis is offered with emphasis upon renal transplantation, renal failure, renovascular hypertension, and other aspects of medical and surgical disease. Weight: 8. Every term. *Glenn, Robinson, and Respective Staffs*

SUR-225(C). ***Investigative Urology.*** Established program of urologic investigation, dealing with physiology, pharmacology, and pathology of: experimental animal surgery, urinary diversion, renal hypertension, pediatric urology, bladder physiology, ureteral physiology, urologic endocrinopathies, and pharmacology. Students with interest in any area of clinical surgery are encouraged to participate. Weight: 8. Terms: 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Boyarsky, Glenn, Dees, Labay, Barry, Gregg, Malin, Semans, and Staff*

SUR-227(C). ***Clinical Urologic Surgery.*** The diagnosis, management, and surgical treatment of patients with urologic disorders will be stressed. Students will be afforded intimate association with the entire staff in the clinics, wards, and operating rooms. Cystoscopic and urographic diagnostic methods along with other techniques will be taught. Weight: 8. Every term. *Glenn, Dees, Boyarsky, Anderson, and Staff*

SUR-230(C). ***Seminar in Urology and Uroradiology.*** Seminar and clinical course by members of the staff in urology and radiology to provide an introduction to the spectrum of urologic diseases and surgery, amplified by uroradiologic diagnostic methods. Clinical problems will be stressed, including endocrinopathies, pediatric urology, obstructive uropathies, renovascular hypertension, and urologic malignancies. Informal teaching seminars will be followed by ward and clinic rounds with demonstrations of uroradiologic methods. Weight: 2. Every term. *Glenn, Lester, Urology and Radiology Staff*

SUR-233(C). ***Basic Neurosurgery Course.*** Disease conditions commonly encountered in neurosurgery are presented. Clinical presentation of a common neurological disorder such as brain tumor or head injury is made by a member of the staff. Clinical features and plan of diagnostic investigation are stressed. The clinical disorder is used as a focal point from which to carry the presentation into the basic science area related to the clinical problem. Weight: 1. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Odom, Nashold, Mahaley, and Wilkins*

SUR-235(C). ***Clinical Neurosurgery.*** Course is designed for those students with future interest in the neurological sciences. Duties include the workup and care of inpatients, workup of clinic patients, assistants in the operating room, routine postoperative care, daily rounds, and night call. Weekly conferences are held in neurology, neuropathology,

and neuroradiology, neurophysiology and anatomy, and special lectures Weight: 8. Every term. *Odom, Nashold, Mahaley, and Wilkins*

SUR-237(C). *Investigative Neurosurgery.* The student is assigned a project relating to the neurological sciences and is provided with technical help, recording equipment, and experimental animals necessary for its completion. Each student plans and executes his own individual project, with the help of the neurosurgery staff. Weekly conferences are also attended. Weight: 8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Odom, Nashold, Mahaley, and Wilkins*

SUR-239(C). *Clinical Otolaryngology.* This course will provide the student with a comprehensive survey of clinical otolaryngology. Duties will include participation in both outpatient clinic activities and inpatient care in addition to assisting in the operating room. The student will participate in ward rounds and in the various conferences held by the division. Weight: 6. Every term. *Hudson and Kenan*

SUR-240(C). *Otolaryngologic Seminar.* This conference and demonstration course will provide an introduction to a variety of clinical problems in otolaryngology. Lectures will be supplemented with case presentations illustrating problems encountered in this field. Weight: 1. Every term. *Hudson and Kenan*

SUR-241(C). *Medical Audiology and Speech Pathology.* Students will be working in the Hearing and Speech Clinic. Special attention will be given to advanced audiometric techniques including instruction in the use of the Bekesey and PGSR audiometry. Emphasis will also be placed on vestibular mechanisms and testing. The student will also spend some time with the speech pathologist observing methods diagnosis and management of the various speech problems. Contact with clinical Otolaryngology will be maintained. Weight: 5. Every term. *Mr. King and Dr. Massengill*

SUR-245(C). *Reconstructive Plastic Surgery.* Study of broad principles of trauma, wound healing and varied reparative processes. Weight: 6. Every term. *Pickrell, Georgiade, and Staff*

SUR-248(C). *Investigative and Clinical Approach to Wound Healing, Including Tissue Preservation, Microbiology of Burns.* Purpose of this course is to orient students both in the laboratory and on a clinical basis of the various investigative possibilities giving him the opportunity to work in the plastic surgery research laboratories and correlate the clinical aspects. Weight: 6. Every term. *Georgiade, Pickrell, and Staff*

SUR-249(C). *Speech and Hearing Problems in Children with Clefts of the Lip and Palate.* Students will have abundant opportunity to learn and work in the Speech and Hearing Laboratory and in the Child Guidance Clinic with children with speech defects. Methods of evaluation, testing and remedial measures will be studied thoroughly. Weight: 5. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, April-May. *Massengill, Pickrell, Hudson, and Staff*

SUR-250(C). ***Clinical Acute Respiratory Physiology.*** Work in Anesthesiology Blood Gas Laboratory learning theory and practice of oxygen electrode, carbon dioxide electrode and pH meter and ancillary techniques, and in Recovery Room, Respiratory Care Unit and Study of ventilator problems. Weight: 2. Every term. *Hall, King, Mr. Anderson, and Mrs. Scheuer*

SUR-252(C). ***Clinical Anesthesiology II.*** Introduction to theory and practice of clinical surgical anesthesia, diagnostic and therapeutic nerve blocks, and cardiopulmonary resuscitation. Students will review physiology and pharamacology of anesthesia and perform general and regional anesthesia and will assist in post anesthetic respiratory care. Weight: 8. Every term. *Dent, Hall, Vartanian, and King*

SUR-253(C). ***Anesthesiology Research.*** Course teaches techniques utilized in clinical and laboratory research in anesthesiology. In collaboration with the faculty, the student will work on a research project related to the physiology of pharmacology of anesthetic practice. A wide range of facilities is available for the measurement of respiratory and circulatory parameters, both in animals and in man. Weight: 8. Every term. *Hall*

SUR-255(C). ***Medical Speech Pathology.*** Diagnostic and rehabilitation treatment used with the patients at Medical Center, including articulation disorders, delayed speech development, cleft palate, stuttering, voice disorders, aphasia, cerebral palsy, language disorders, mental retarded speech, lisping, oral inaccuracy, laryngectomy, and other disorders of speech not falling under one certain category. Weight: 1. Every term. *Massengill*

SUR-257(C). ***Medical Speech Pathology Applied to Reconstructive Plastic Surgery.*** Research techniques used by speech pathologist with reconstructive plastic surgery patients having organic speech problems. Emphasis placed on cinefluorographic investigation and speech results achieved by different surgical procedures. Different speech appliances also reviewed. Organization of speech pathology research programs coordinated with reconstructive surgery departments. Weight: 1. Every term. *Massengill*

SUR-259(C). ***General Principles of Orthopaedics.*** A full or part-time experience on the Orthopaedic service with duties and responsibilities similar to a junior intern. In-patient care, out-patient examination, and operating room experience are included. Individual or group discussions each day with attending staff. The purpose of the course is to present broad concepts of orthopaedics to students planning general practice, pediatrics, allied surgical specialties or orthopaedics. Weight: 8. Every term. *Goldner, Baker, Clippinger, McCollum, Bassett, and Staff*

SUR-261(C). ***Office and Ambulatory Orthopaedics.*** Introduction to management of patients with complaints referable to the musculoskeletal system. Emphasis on methods of examination and X-ray interpretation.

Orientation in record keeping, use of punch cards for diagnosis, office management and similar details. Weight: 8. Every term. *Goldner, and all sensior staff at Duke, Watts and Durham V.A. Orthopaedic services. Students may select individual instructor*

SUR-263(C). ***Orthopaedics in the Community Hospital.*** Office and hospital practice are emphasized with participating experiences in coordination of private practice, clinic practice, emergency room, and consultation services. The course is conducted in the offices of the Associate Orthopaedists in Durham and the Community Hospital. Weight: 8. Every term. *Bugg, Glasson, Coonrad, Kapoor, and Staff*

SUR-265(C). ***Cerebral Palsy and Other Musculoskeletal Abnormalities.*** The material for this course is available at the North Carolina Cerebral Palsy Hospital and Duke University Medical Center. Students participate in the daily program of diagnosis, treatment and rehabilitation techniques of the patient with neurological deficits. This includes all aspects of management with experiences in the clinics and in the operating room. Weight: 8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Goldner and Staff of Orthopaedic Service, Duke and North Carolina Cerebral Palsy Hospital*

SUR-267(C). ***Clinical Conference in Cerebral Palsy.*** Conferences are arranged for those interested in neurological diseases, pediatrics, and related fields. These conferences demonstrate both the individual and group approach to the patient with complex neurologic condition as it affects both growth and development. Outpatients and inpatients are utilized for subject material. Staff personnel readily available for individual seminars. Weight: 4. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Baker, Goldner, Bassett, and North Carolina Cerebral Palsy Hospital Staff*

SUR-269(C). ***Upper Extremity Surgery and Reconstruction.*** A general or specific study of conditions affecting the entire upper extremity. The hand may be studied as evidence of systemic disease or from the viewpoint of hand deformities after trauma, congenital defects, or the changes resulting from arthritis. Weight: 8. Every term. *Goldner, Clippinger, McCollum, Bassett, and Staff*

SUR-271(C). ***Arthritis—Spine and Extremities.*** Clinical and operating room experience in the management of adult and children's rheumatology. Program coordinated with the Department of Medicine. Rounds, conferences, and clinics are attended at scheduled times. The student has responsibilities of outpatient and inpatient care. Laboratory investigation available if desired. Weight: 8. Every term. *McCollum, Goldner, and Medical Rheumatology Staff*

SUR-273(C). ***Athletic Medicine—Physical Conditioning and Management of Injuries.*** The course is directed toward preparing physicians for participating in the athletic aspects of a community school program. The student will learn the general principles of management of trauma, func-

tion of the musculoskeletal system, physical conditioning, protective equipment and the care of the athlete. Experience is available with the Duke athletic teams as well as those of the local high schools. Weight: 8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Baker, Clippinger, Bassett, and Orthopaedic Staff*

SUR-275(C). ***Electromyography.*** This course is an introduction to the theory, techniques and practice of clinical electromyography. Conferences and demonstrations are the principle methods of instruction. The student participates in all phases of diagnostic study and learns the indications for use of electromyography as well as the interpretation of data. Weight: 2. Every term. *Clippinger, Goldner, and Orthopaedic Staff*

SUR-277(C). ***Orthopaedic Research.*** Individual projects are assigned for completion during a limited period of time. A student works with an investigator in the Orthopaedic Laboratory either at Duke Medical Center or the Durham Veterans Administration Hospital. Clinical investigative studies are also available at both institutions. Weight: 8. Every term. *Goldner, Orthopaedic Senior Staff, and House Staff*

SUR-279(C). ***Orthopaedic Amputee Program—Clinics, Surgery, and Prosthetics.*** The basic principles of amputation problems are presented in preoperative indications, principles of surgery and postoperative inpatient and out-patient care. The multiple problems are presented through weekly amputee clinics. The principles of amputee prosthetics are taught in the Prosthetic Department. The student follows a particular patient through the entire program from amputation to vocational placement. Weight: 4. Every term. *Goldner, Clippinger, Mr. Titus, Mrs. Horton, other members of the Physical Therapy Staff, and the Duke Prosthetics Department*

SUR-281(C). ***Introduction to Fractures and Musculoskeletal Trauma.*** Students will participate in the emergency management of patients through the Duke emergency room primarily, but also through Watts, Lincoln and the Durham VA Hospitals. Principles of fractures in trauma will be given throughout the week at specified times and attendance at fracture clinic will be required. Weight: 3. Every term. *Entire Senior Staff at Duke and Watts, supervision by Dr. Goldner at Duke, Dr. McCollum at V.A., and Dr. Bugg at Watts*

SUR-283(C). ***Orthopaedics of Infants, Children, and Adolescents.*** Orientation of students interested in pediatrics or orthopaedics with emphasis on the basic problems associated with congenital abnormalities and other syndromes of the musculoskeletal system in these age groups. Experience with patients extending from infancy to adolescence is available. The depth of teaching and experience can extend from a few hours a week observation to a full externship. Weight: 8. Every term. *Goldner, Baker, Clippinger, McCollum, Bassett, Stelling, Meyer, Miller, Bugg, Coonrad, Glasson, Kapoor, Lincoln, and Musgrave*

SUR-285(C). ***Advanced Surgery: General and Thoracic.*** Special atten-

tion will be given to those subjects in surgery common to all medical practices. Patients will be assigned to the students. The major emphasis will be on physiologic and pathologic changes, diagnosis, and the indications for operation. Weight: 8. Every term. *Sabiston and Staff*

ANA-206(B).** ***Anatomy of Back and Extremities. Complete dissection of back and extremities, including pectoral and pelvic girdles. Visual aids will be used extensively. Course planned for orthopaedics, general practice, or neurosurgery. Weight: 3. Term 3: Jan.-March. *Markee and Bassett*

ANA-208(B).** ***Anatomy of the Trunk. Emphasis will be on the anatomy of the thoracic, abdominal and pelvic organs, and their blood supply, innervations and relationships. The dissections will be augmented by use of prosections, motion pictures, and prerecorded television presentations. Course planned for general practitioners, specialists in surgery and internal medicine. Weight: 2. Term 3: Jan.-March. *Markee and Duke*

ANA-216(B).** ***Anatomy of the Head. Course deals with: (*a*) the interior of the cranium and the ear, eye, and orbital contents; (*b*) deeper structures of the head, including the brain and its blood supply; (*c*) the nasal and orbital cavities, the pharynx and paranasal sinuses. This course is planned for general practitioners, neurosurgeons, clinical neurologists, ophthalmologists, and otolaryngologists. Visual aids will be used extensively. Weight: 2. Term 4: April-May. *Markee and Everett*

ANA-256(B). ***Surgical Neuroanatomy.*** This course will utilize gross brain and spinal cord specimens, the skull, angiograms, X-rays, pneumoencephalograms, and myelograms to correlate neurosurgical diseases and procedures with regional nuclei and tracts of the nervous system. Weight: 1. Terms 2 or 4: Nov.-Jan., April-May. *Mahaley*

CTP-209(C) ***Survey of Cancer, Clinical and Basic.*** A general survey course in clinical cancer taught by an interdepartmental faculty. Consists of seminars in basic aspects of oncology and student participation in assigned patient areas concerned with cancer and diagnosis and treatment. Weight: 8. Terms 1 or 3: Sept.-Nov., Jan.-March. *Shingleton, Laszlo, Porter, Heyden, and Johnston*

PSC-331(C). ***Dynamic Approach to Medical Problems Based on Psychoanalytic Theory.*** This course will be structured that the tenets and ideas of psychoanalytic psychology will be applied to the ancillary part of the total part of the management of patients on medical and surgical wards (a certain kind of psychosomatic approach). Weight: 2-4. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May.

Health Related Professions

Cytotechnology

Assistant Professor W. Johnston, *Director*; Assistant Professor M. Vazquez, *Assistant Director*; Instructor J. Amatulli; and Staff of Department of Pathology as required in special phases of instruction.

The School of Cytotechnology at the Department of Pathology offers a twelve-month course in technical and diagnostic aspects of exfoliative cytology to qualified individuals. The minimum qualifications are twelve semester hours of biology, which may include anatomy, histology, zoology, botany, and physiology, and at least two years of college. The common practice is to admit individuals with B.S. or A.B. degrees and only in exceptional cases applicants with incomplete college requirements will be considered.

The program consists of two parts. Part I—six months, primarily theoretical and practical exercise in the techniques of exfoliative cytology and interpretation of the clinical material. Part II—six months practical training in all aspects of exfoliative cytology in participating in the routine work of the laboratory. One class is accepted annually on November 1. Graduates of this course are awarded a certificate and are eligible to take the certifying examinations given by the Registry of Medical Technologists of the American Society of Clinical Pathologists. There is no tuition fee. Additional information about the School of Cytotechnology and ap

plications for admission may be obtained from William Johnston, M.D., Department of Pathology, Duke University Medical Center, Durham, North Carolina.

Dietetics

Acting Director M. H. McLachlan; Assistant in Education A. Molleson; Administrative Dietitians M. Solomon, N. Curtis, C. Conely and B. Sowter; Research Dietitians V. Murphy and C. Herring; Clinic Dietitian C. Wason; Therapeutic Dietitians J. Black, M. J. Crawford, C. Fluke, R. Fox, S. Pitz, M. Ramsey, A. Sites

A Dietetic Internship Program is offered to men and women who have earned a bachelor's degree in Food and Nutrition or Institutional Administration and meet the course requirements of the American Dietetic Association. The twelve months of post-baccalaureate work consists of classroom instruction and clinical experience in administration, therapeutics, research, and education. After the successful completion of the Dietetic Internship, certificates and membership in the American Dietetic Association are awarded. For further information write:

Department of Dietetics
Duke University Medical Center
Durham, North Carolina

Hospital Administration

Professor C. Frenzel, *Director*; Assistant Professor D. S. Smith, *Coordinator;* Professors L. Clark, T. Keller; Associate Professor L. Swanson; *Instructor* K. Schoonhagen

Clinical Lecturer E. C. Bryson; *Clinical Associate* M. Pickens; *Clinical Instructors* J. Felts, G. Harris, H. Rowland, B. McCall, J. J. Hayes, C. Cobb, E. McCauley, G. Mack, H. Veit; *Clinical Preceptors* W. Andrews, J. Barnes, H. Bettis, R. Holmes, T. Howerton, J. Moulton, J. Pyne, M. Yount

Graduate education for hospital administration is offered through a 24-month program conducted jointly by the Graduate School and the Medical Center. The Program consists of selected graduate courses in business administration, political science, sociology, and hospital administration, and of a twelve-month administrative residency in hospitals and other health agencies. The Master of Hospital Administration degree is awarded to those who successfully complete the Program.

Detailed information may be obtained from:

Graduate Program in Hospital Administration
Box 3018
Duke University Medical Center
Durham, North Carolina

Medical Technology

Professor T. Kinney, *Director*; Associate Professors J. Goodrich, A. W. Musser, *Associate Director*; S. Osterhout, C. Zmijewski; *Assistant Professors* R. Blaker, W. Kremer, H. Silberman, G. Spooner; Instructor R. Habig; *Teaching Supervisor and Registrar* M. Britt; *Assistant Registrar and Instructor* L. Garriss; Instructors E. Bumgarner, A. Proctor
Clinical Instructors J. Carr, J. Fletcher, C. Harrison, N. Lester, A. Walker, I. Wyatt

The School of Medical Technology offers a twelve-month internship program of instruction and rotation through the clinical laboratories of the Duke University Medical Center and the Veterans Administration Hospital.

The internship program is open to men and women who have either a baccalaureate degree or a minimum of three years of college (in an accredited college or university) with plans for receiving such a degree from the preparatory college upon completion of the internship program. Applicants must have successfully completed at least 90 semester (135 quarters) hours which include:

Chemistry—minimum of 16 semester hours (24 quarter hours) which includes one full year of general college chemistry. The remaining courses may be selected from qualitative, quantitative, organic, physical, or biochemistry. (One semester of quantitative analysis is strongly recommended.) All courses must include lectures and laboratories.

Biological Sciences—minimum of 16 semester hours (24 quarter hours). All required biological sciences must include lecture and laboratories. Courses may be selected from general biology, zoology, botany, physiology, comparative anatomy, parasitology, histology, histologic technique, genetics, or bacteriology. (Bacteriology is strongly recommended.)

Mathematics—minimum of 3 semester hours.

Courses in physics are recommended but not required. Electives may be selected from English, social sciences, arts, and humanities.

Courses taught during the Internship include clinical biochemistry, clinical microscopy, radioisotope theory, microbiology (bacteriology, mycology, virology), immunohematology, parasitology, introduction to

clinical pathology, serologic techniques and histologic techniques. (Classes begin on July 1.)

Students are given a certificate upon completion of the Internship program and are qualified for examination and certification by the Registry of Medical Technologists of the American Society of Clinical Pathologists. They are eligible for membership in the American Society of Medical Technologists. This program is approved by the Council on Medical Education and Hospitals of the American Medical Association.

A $25.00 non-refundable registration fee is required upon acceptance in the program. This is applied toward the $50.00 breakage fee which is payable upon entrance. Students will be furnished rooms in dormitories and will receive a grant-in-aid of $100 a month. Students are required to participate in the Hospital Insurance plan, furnish their own white uniforms, white shoes, and meals. Laundry of uniforms is furnished by the Medical Center. Students can expect to spend $50 to $75 for books during the year.

For further information and/or application blanks, write to: Registrar, School of Medical Technology, Department of Pathology, Duke University Medical Center, Durham, North Carolina 27706

Nuclear Medicine

Professor R. Lester, *Chairman of the Department of Radiology*; Associate Professor J. Goodrich, *Director of Nuclear Medicine Division*; Professor G. Baylin; Associate Professors P. Cavanaugh, A. Sanders; Assistant Professors R. Gorten, C. Harris; Associate A. Wyrick, R. Wilkinson

Instructor H. Barnett; *Radiological Safety Officer* C. Knight

The School of Nuclear Medicine Technology offers a twelve-month program of instruction and clinical training in the Division of Nuclear Medicine, Department of Radiology. The program is divided into two parts: a three month intense didactic and laboratory preclinical course followed by a nine-month internship in the clinical aspects of Nuclear Medicine Technology. The nine-month internship is available only to those who successfully complete the preclinical course.

The three-month preclinical course covers such topics as nuclear physics and instrumentation, nuclear chemistry, radiation safety and health physics, mathematics, and radiation biology. Classes meet five and one-half days per week and consist of lectures, classroom demonstrations, laboratory sessions, and seminars.

The nine-month internship consists of scheduled rotation through all areas of the clinical laboratory. Personal instruction and training are given in blood volume-red cell mass determinations, renograms, scanning, research techniques, thyroid function studies, placental localization, ultra-

sound technique, and many others. This period of training is also augmented with continued classroom and laboratory work.

Students who successfully complete the nine-month internship receive a certificate and are qualified for examination by nuclear medicine technology registries.

Applications will be accepted for consideration from the following:

1. Students who have earned two years or more of college credit toward a degree in any field of science.
2. Registered or registry-eligible medical technologists.
3. Registered or registry-eligible radiologic technologists.
4. Registered nurses.

All applications must be submitted by May 1. The admissions committee will review all applications at that time and notify all applicants by May 15, regarding their admission to the school.

A tuition fee of $100.00 is required upon acceptance and is payable to the Division of Nuclear Medicine. If an applicant withdraws before August 1, this fee is refunded. After August 1, no refunds are made. The cost of books and supplies is approximately $50.00. Laboratory coats and laundry service are furnished by the Medical Center.

Students who successfully complete the three-month preclinical course and enter the nine-month internship receive a monthly stipend of $100.00.

For further information or application forms, write to Huey D. Barnett, Box 3166, Division of Nuclear Medicine, Duke University Medical Center, Durham, North Carolina, 27706.

Nurse Anesthesia

Professor Sara J. Dent, *Chairman, Department of Anesthesiology*; Instructor M. Campbell, *Director of School of Anesthesia for Nurses*; M. Gardner, *Educational Program Director*; Assistant Nurse Anesthetists L. Glenn, F. Perry, A. Truitt, M. Haigler, A. Moody, G. Cowan, F. Ivey, R. Johnson, J. Ralph, G. O'Briant, N. Nelms, S. Blake, S. Crowder, W. Doll, M. Friedman, G. Jackson, P. Palmer, J. Armstrong, P. Gamburg, L. Phillips

The twenty-four month course in anesthesia is available to well-qualified registered nurses. Instruction embraces the theoretical aspects and clinical application of all drugs and techniques in accepted usage. The program is divided into quarters. The major part of the basic theoretical instruction is given during the first three quarters. After a preclinical period of eight weeks, clinical practice runs parallel with the theoretical program. One class is accepted annually and enrolled in January.

All appointments of the current year are made by September 1 of the preceding year. Graduates of this course are eligible to take the qualifying examination for membership in the American Association of Nurse Anesthetists. Tuition is $150.00. Additional information concerning nurse anesthesia may be obtained from Mary B. Campbell, C.R.N.A., P.O. Box 3204, Duke University Medical Center, Durham, North Carolina.

Physical Therapy

Assistant Professor M. Jacobs, *Director*; Associate Professor H. Kaiser; R. Federchuck, *Director of Physical Therapy Services*; J. Barr, *Secretary-Recorder*; F. Gehweiler, *Coordinator of Clinical Education*

Associate E. Blumenthal; *Instructors:* J. Barr, J. Cantey, R. Federchuck, G. Horton, E. Villanueva; *Clinical Instructors:* B. Baker, B. Denny, C. Gervin, S. Herzog, G. Hutcheson, J. Nelson, K. Randolph

The curriculum in Physical Therapy is conducted under the joint auspices of the Graduate School and the Medical Center. Two programs are offered. One leads to a Certificate in Physical Therapy and the other to a Master of Arts degree and a certificate. Graduates of either program are eligible for state and national qualifying examinations and membership in the American Physical Therapy Association.

Requirements for admission are a baccalaureate degree, completion of prerequisite courses and satisfactory scores on the Graduate Record Examination. Basic prerequisites are courses in mathematics (through beginning calculus), psychology, and laboratory courses in biology, chemistry (inorganic and organic), and physics.

The 15-month Certificate Program in Physical Therapy includes courses in anatomy, physiology, pathology, kinesiology, physical therapy, and rehabilitation as related to the medical and surgical specialties, administration, physical therapy procedure courses and a period of supervised clinical experience at Duke University Medical Center, affiliated hospitals, rehabilitation centers, and public health facilities.

The program leading to a Certificate in Physical Therapy and a Master of Arts degree may be completed in two years. Students specializing in Physical Therapy may request admission to the Graduate School and, if admitted, follow the curriculum for the Master of Arts degree in any of several related fields. Admission must be through the appropriate graduate department. Selected physical therapy courses are integrated with the graduate courses throughout the two-year period.

Tuition and fees are $1,800 for the 15-month Certificate Program and $2,025 for the program leading to a Certificate in Physical Therapy and a Master of Arts degree.

For further information, write to the Director of Physical Therapy, Box 3247, Duke University Medical Center, Durham, N.C. 27706.

Prosthetic and Orthopaedic Appliances

Assistant Professor B. Titus, *Director*; Assistant Prosthetist and Orthotis R. Gooch; Assistant Orthotist P. Ray

The function of this Department is to produce prosthesis and ortho paedic appliances for the medical profession. Facilities for individua training in specific techniques or methods employed by this Departmen are available. Those who complete four years' training are eligible to tak the examination of American Board of Certification.

Radiologic Technology

Professor R. Lester, *Chairman of the Department of Radiology*; Assistan Professor J. Cahoon, *Director of the School of Radiologic Technology* Professor G. Baylin; Associate Professors W. Barry, M. Capp, J. Goree, B Worde, P. Cavanaugh; Assistant Professors I. Johnsrude, A. McCrae; As sistant to the Director B. Holtzman

Technical Instructors J. Miller, E. Porter, D. Riley, C. Campbell, J Stroud, B. Holtzman, V. Moody, M. Ahbe, J. Tennant, G. Carlson, B Coman; *Radiological Safety Officer* C. Knight

The School of Radiologic Technology in the Department of Radiology offers students interested in the allied health sciences three programs of instruction.

The first, open to high school graduates and those with some college experience, consists of two calendar years of instruction and clinical training leading to certification by the American Registry of Radiologic Technologists.

The second, in affiliation with Elon College, enables students to obtain a Bachelor of Science degree in radiologic technology along with ARRT certification.

The third program provides a one-year graduate curriculum in either neuroradiography or vascular radiography for registered radiologic technologists.

The Duke School of Radiologic Technology is approved by the American College of Radiology, the American Medical Association's Council on Medical Education, the American Society of Radiologic Technologists, and the American Registry of Radiologic Technologists.

Certificate Program

Students participating in the two-year certificate program receive both academic and clinical training in all aspects of radiologic technology. At the conclusion of the program, the student is eligible to take the national board examinations sponsored by the American Registry of Radiologic Technologists. A student must pass the national boards before he is awarded a diploma from the school.

Candidates for admission must be graduates of accredited high schools and rank in the upper third of their class. Applicants with one or more years of college credit, however, are given priority.

Official transcripts of high school and/or college grades, a list of three references and a recent photograph must be included with a student's application. The school recommends that students be between the ages of 19 and 30 at the time of enrollment.

Final deadline for applications is July 15. A $2 application fee made payable to the School of Radiologic Technology must accompany each application.

Students accepted into the program are required to pay a non-refundable $100 registration fee to the University by July 1. Books, supplies and uniforms cost approximately $175. Laundry of uniforms is provided by the medical center.

At the end of six months, if the student's work has been unsatisfactory or shows inaptitude for work in radiologic technology, he is advised to withdraw from the course.

At the successful completion of the first year of the course, the student receives a stipend of $100 per month during his second year.

The Baccalaureate Program

Students pursuing a B.S. degree in radiologic technology take two years of work in liberal arts at Elon College and then come to Duke for the last two years of clinical training.

The program was established to resolve the acute shortage of radiologic technologists qualified for instructional and administrative positions.

Students receive the B.S. degree in radiologic technology from Elon College and a certificate from Duke after passing the national board examinations and the Duke section of the course.

Students entering this program must fulfill all entrance requirements of Elon College. Acceptance is based on high school records with emphasis on a student's rank in his class. Recommendations, scores on the Scholastic Aptitude Test of the College Entrance Examination Board, and scores on tests given by the high school are also considered. The completed application must be submitted to Elon College by March 1. A nonrefundable application fee made payable to Elon College must be submitted with the application.

Upon acceptance, students must send a $35 acceptance fee and a $50 room reservation fee. Tuition, room, and board charges total $1,585 each year at Elon. The acceptance fee and room reservation fee are subtracted from this total. Books and other expenses at Elon are estimated at $100 per year.

At Duke, $100 tuition must be paid to the University by July 1 prior to the third year. Books, supplies, and other expenses at Duke are estimated at $175.

Upon successful completion of three years of the program, the student receives a stipend of $100 each month during his final year.

Graduate Curriculum

The graduate program, open only to registered radiologic technologists, provides a one-year course in either neuroradiography or vascular radiography. The course consists of clinical work, with some research and experimental investigation. Students participating in the graduate curriculum are granted a $100 stipend each month during the calendar year.

No living quarters are provided for paramedical students by Duke University, and students in radiologic technology live in town at their own expense. For further information or application blanks, write to John B. Cahoon, Jr., R.T., Director, School of Radiologic Technology, Duke University Medical Center, Durham, North Carolina, 27706.

Veterinary Medicine

Associate Professor J. LeMay, *Chairman*; Associates B. Sherwood, J. Vekilvadeh

The function of this Department is to facilitate the various teaching and research programs that require laboratory animals. Veterinary medical consultation is provided for research projects in which experiments are conducted on animals. Assistance is made available in selecting the most suitable species or strain of laboratory animal to use in a given study. In addition, animals are procured, quarantined, and appropriately conditioned in order to provide a highly reliable biological tool. A wide variety of technical services are carried on, such as providing whole blood of a variety of species, collecting biological specimens, providing clinical pathologic examinations, preparing animals for surgery, postsurgical care, and maintenance of the animal colonies.

The Department collaborates with those departments of the School of Medicine that utilize laboratory animals in their teaching programs. Various disease states are experimentally produced in animals for student observation and study, and techniques for collecting biological speci-

mens for additional study are demonstrated. Aid is given in setting up and carrying out these demonstrations and studies on animals.

The Veterinary medical staff teaches an introductory course in animal experimentation which is a required couse for physician's assistant trainees. Plans are under way to make this course available to others and offer additional courses of study.

Research programs on some of the spontaneous diseases of laboratory animals are carried out by the staff both independently and with other Medical Center investigators.

Inhalation Therapy

The School of Inhalation Therapy is under the medical direction of the Department of Anesthesiology. It is accredited by the Council on Medical Education of the American Medical Association.

An eighteen-month course is offered which combines didactic instruction and on-the-job training. Approximately ten students are enrolled in this school each year. Graduate students are qualified to participate in National Board Exams. Associate degree programs are under development and will be offered by 1970.

All applicants must be high school graduates. Previous medical experience is desirable. A stipend commensurate with background and experience is offered. For detailed information, write to Houston R. Anderson, Director, School of Inhalation Therapy, Box 3094, Duke University Medical Center, Durham, North Carolina 27706.

Physician's Assistant Program

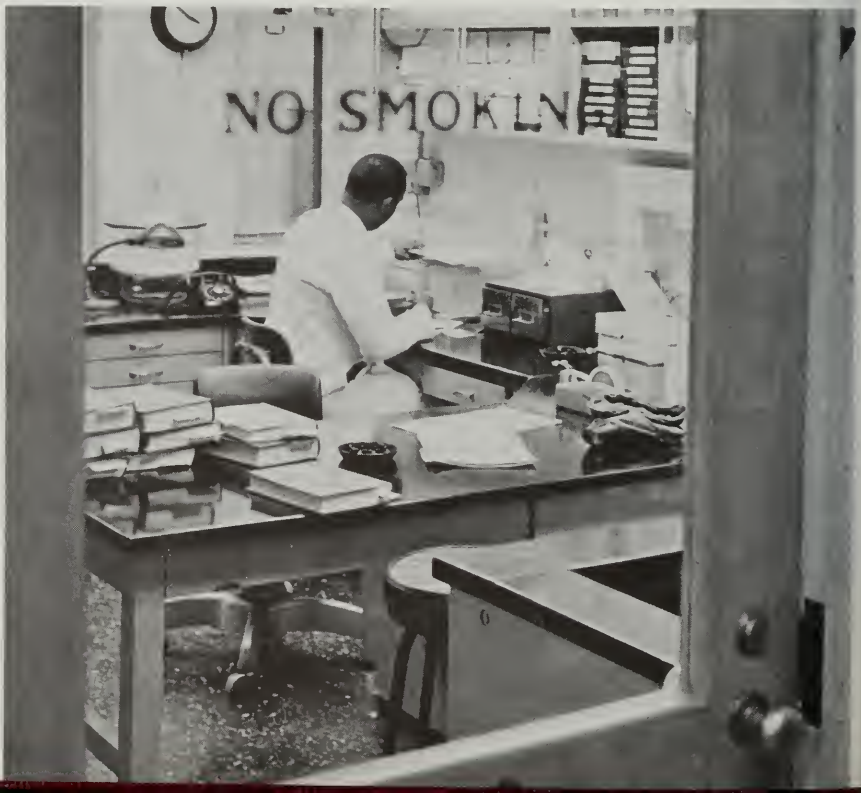
Professor E. H. Estes, Jr., *Chairman*; D. R. Howard, *Program Director*; J. C. Mau, *Administrative Director*; D. E. Lewis, *Director of Education.* Associate Professors W. O. Dobbins, C. P. Hayes, J. A. Kylstra, J. C. LeMay, H. A. Saltzman, and A. G. Wallace. Assistant Professors F. P. Dalton, C. J. Gerber, R. F. Klein, and J. A. McFarland. Associate B. F. Sherwood

Instructors K. G. Andreoli, J. A. Braun, S. R. Fortney, T. A. Huff, F. R. Johnston, J. J. McQueary, R. F. Neelon, A R. Price, C. P. Roe, and W. I. Sims

The Physician's Assistant Program, initiated in 1965, is designed to develop a new category of intermediate level professional assistants who will function as a member of the health team under the direction of physicians for the purpose of assisting them in areas of clinical and research endeavors.

The twenty-four month program is divided into a nine-month preclinical didactic section and a fifteen-month clinical section. The didactic section includes courses in history, Philosophy and Ethics of Medicine, Introduction to Basic Clinical Laboratory, Medical Records and Terminology, Introduction to Animal Experimentation, Introductory Chemistry, Anatomy and Physiology, Pharmacology, Metabolism, Advanced Laboratory and Clinical Procedures, Introduction to Clinical Medicine, Community Health, Medical Instrumentation, Physical Diagnosis, Introduction to Radiology, Fundamentals of Electrocardiography, and Basic Principles of Data Processing. The clinical section includes forty weeks of mandatory rotations and twenty-four weeks of elective rotations. Emphasis during the clinical experience is available in medicine, surgery, pediatrics, and several subspecialty areas.

Candidates for admission must be high school graduates with courses in math, chemistry, and biology and have at least three years of experience in the health field. There is no charge for tuition and the program is approved by the Veterans Administration for G. I. Bill benefits. Money is available to provide a stipend for those who are ineligible for veterans benefits and to supplement the benefits of those attending on the G. I. Bill. The program is in a period of rapid growth and expansion which will accommodate increased numbers of students in the future. For further information, write to: Program Director, Physician's Assistant Program, P. O. Box 2914, Duke University Medical Center, Durham, North Carolina, 27706.



Roster of Students

Class of 1972

Alexander, John Charles (Duke), Rocky Mount, North Carolina
Andersen, Dana Kimball (Duke), Glen Cove, New York
Andrade, William George (Houston), Wichita Falls, Texas
Andrew, Clifford George (Columbia), Florissant, Missouri
Andrews, Michael Joseph (Guilford), Greensboro, North Carolina
Arvan, Glenn Douglas (Rochester), Scarsdale, New York
Barco, Daniel Harris (Allegheny), Medina, Ohio
Bley, Donald Edward (Johns Hopkins), Takoma Park, Maryland
Bornstein, Neal Gerald (Bowdoin), Swampscott, Massachusetts
Bowes, Pamela Zoe (Smith), Huntington, New York
Butts, John Davis (Duke), Closter, New Jersey
Carnavale, Nicholas Theodore (Arizona), Tucson, Arizona
Charney, James (Columbia), Hewlett, New York
Childs, Robert William (Princeton), Morgantown, West Virginia
Cohen, Lawrence Franklin (Dartmouth), Chevy Chase, Maryland
Copeland, Dana Derward (Rice), Baton Rouge, Louisiana
Dalton, James David (Duke), Asheboro, North Carolina
David, Clifford Baynes (Duke), Jacksonville, Florida
Davis, Glenn Craig (Reed), Durham, North Carolina
Drennan, Dale Clay (Pennsylvania), Barrington, Rhode Island
Duncan, Charles Cecil (Vanderbilt), Durham, North Carolina
Eckman, Laurie Nelson (Davidson), Houston, Texas
Engel, Susan Jean (Duke), Durham, North Carolina
Ewald, Thomas McConnell (West Virginia), New Martinsville, West Virginia
Forth, David Stephens (Duke), Roanoke, Virginia

Frey, James Lewis (Amherst), St. Louis, Missouri
Garr, David Ross (Duke), Miami, Florida
Goodman, William Bruce (Missouri), Kansas City, Missouri
Gordon, Gene Stephen (Colgate), Queens, New York
Grandis, Arnold Stephen (Washington & Lee), Richmond, Virginia
Gretes, John Constantine (Wake Forest), Norfolk, Virginia
Hankey, Terry Lee (Wright State), Dayton, Ohio
Haynes, James Hugh (Tennessee), Durham, North Carolina
Herpel, John Kling (Williams), Wallingford, Pennsylvania
Jarrett, David Bernard (Rochester), Flushing, New York
Kessler, Dale Leroy (Dartmouth), Durham, North Carolina
Lane, John Weston (Georgia), Avondale Estates, Georgia
Lawrence, John Elmore (North Carolina), Raleigh, North Carolina
Leight, George Staples (Davidson), Winston-Salem, North Carolina
Levitin, David Alan (Pittsburgh), New Haven, Connecticut
Levitt, Morton Hill (Princeton), Brooklyn, New York
Lewis, Mary Kendra (Duke), Swarthmore, Pennsylvania
Love, James McLean (Williams), Lincolnton, North Carolina
Lundy, Edmund George (Yale), Durham, North Carolina
McCarty, Kenneth Scott (Duke), Durham, North Carolina
McClure, Charles Gettys (Duke), Atlanta, Georgia
McMahon, Edward Matthew (Williams), Fair Haven, New Jersey
McRae, John Radford (Georgia Tech.), Augusta, Georgia
Martin, Samuel Preston (Yale), Gainesville, Florida
Michel, Randall George (Duke), Glendora, California
Migliori, John Gererd (Dartmouth), Trenton, New Jersey
Miller, Clinton Frederick, III (Yale), Wilmington, Delaware
Mittler, Brant Steven (Harvard), Corpus Christi, Texas
Morrow, John Faulkner (Yale), Memphis, Tennessee
Oakes, Walter Jerry (Missouri), DeSoto, Missouri
Oelrich, William Lyle (Davidson), Sanford, North Carolina
Pearlman, Mark Howard (Williams), Rochester, New York
Pehlke, Donald Michael (Harvard), Pacific Palisades, California
Perry, Henry Baker (Duke), Greensboro, North Carolina
Peterson, John Milton (Grinnell), Moline, Illinois
Powell, Robert Charles (Shimer), Largo, Florida
Rausch, Curt Norman (Yale), Angola, Indiana
Rhodes, Glen Robert (Cornell), Queens, New York
Rixse, Robert Sheldon (Johns Hopkins), Alexandria, Virginia
Robison, George Randolph (Florida), Orlando, Florida
Sanders, Lee (Swarthmore), Levittown, Pennsylvania
Schiff, Richard Ivan (George Washington), Wheaton, Maryland
Schmidt, Philip McKenzie (U. S. Air Force Academy), Durham, North Carolina
Serwer, Gerald Arthur (Rice), Oklahoma City, Oklahoma
Shangold, Mona Marlynn (Pennsylvania), Perth Amboy, New Jersey
Sides, Paul J. (Centre), Lancaster, Kentucky
Somers, William Alan (William & Mary), Lynchburg, Virginia
Spaulding, Jean Gaillard (Columbia), Durham, North Carolina
Starr, John Walter (Emory), Albany, Georgia
Taylor, Harvey Grant (U. S. Military Academy), Houston, Texas
Tribley, Nancy Jeanette (Duke), Greenville, North Carolina
Tschang, Tai Po (Southern Illinois), Shatin, NT, Hong Kong
Weisiger, Richard Atlee (Princeton), Potomac, Maryland
Welch, Nancy Mae (Lynchburg), Orlando, Florida

Wellman, David Kenton (Duke), Huntington, West Virginia
Wheeler, Clifton Cannady (Davidson), Durham, North Carolina
Widness, John (Amherst), Lynnfield, Massachusetts
Willis, John Kelver, II (Duke), Johnson City, Tennessee
Wilson, Jeffrey Wellington (Duke), Pittsburgh, Pennsylvania
Wittig, John Henry (State Univ. of New York at Buffalo), Buffalo, New York
Woodhall, Philip Barnes (Georgia), Macon, Georgia

Class of 1971

Abraham, Gerald Michael (Brown), New York, New York
Ahmann, Gerald Black (Duke), St. Charles, Missouri
Barnes, Robert Paul (U.S. Air Force Academy), Edmonds, Washington
Baten, Michael (Pennsylvania), Paterson, New Jersey
Beach, Roberta Kay (Duke), Winston-Salem, North Carolina
Behringer, Frederick Richard, Jr. (Dartmouth), Baltimore, Maryland
Belmaker, Elaine Zarembka (Radcliffe), St. Louis, Missouri
Belmaker, Robert Henry (Harvard), North Miami Beach, Florida
Beuttel, Stephen Charles (Wake Forest), Pleasantville, New Jersey
Boehm, Timothy Michael (George Washington), Alexandria, Virginia
Boleman, Patricia Audrey (Manhattanville), New York, New York
Brater, Donald Craig (Duke), Oak Ridge, Tennessee
Buckley, David Kennedy (Notre Dame), Ft. Lauderdale, Florida
Buffington, Joseph Suttles (Davidson), Lithonia, Georgia
Cies, William Andrew (Stanford), San Marino, California
Cobbs, Walter Herbert, III (Harvard), Cincinnati, Ohio
Colpitts, Michael Ralph (Stanford), Maryville, Tennessee
Cox, Edwin Baggett (Vanderbilt), Nashville, Tennessee
Croker, Byron P., Jr. (Pittsburgh), Pittsburgh, Pennsylvania
Curry, Robert Whitney, Jr. (Florida), Orlando, Florida
Davis, Holly Wilson (Duke), Richmond, Virginia
Eck, Linda Ann (Duke), Baltimore, Maryland
Ehrman, Mark Lawrence (Princeton), Pittsburgh, Pennsylvania
Ell, Michael Arthur (Florida State), Sarasota, Florida
Felsenfeld, Arnold Jay (Columbia), North Arlington, New Jersey
Fichtelman, Jon Robert (Duke), Lake Worth, Florida
Fischer, Kenneth C. (Duke), Brooklyn, New York
Gilmore, Robert William (U.S. Air Force Academy), East Liverpool, Ohio
Haliasos, Constantine Athan (Virginia), Danville, Virginia
Hartley, David Paul (New), Wheatland, Wyoming
High, William Lank (Duke), Boone, North Carolina
Horne, McDonald Kelso, III (Princeton), Memphis, Tennessee
Horowitz, Alan Jay (Harvard), Brooklyn, New York
Hourigan, Philip Anthony, Jr. (Yale), Milford, Connecticut
Hoverman, John Russell (Dartmouth), Seaford, New York
Hybarger, Charles (Duke), Beltsville, Maryland
Jaffe, Charles J. (Johns Hopkins), Merion, Pennsylvania
Johnson, Van Warren (Yale), St. James, Minnesota
Jones, Georgeanna Seegar (Mount Holyoke), Baltimore, Maryland
Juk, Steven Stanley, Jr. (South Carolina), Georgetown, South Carolina
Kaufman, Michael David (Union), Mahwah, New Jersey
Kelemen, Marcia Ann (Mount Holyoke), West Long Branch, New Jersey

Leonard, Stephen David (Oberlin), Kew Gardens, New York
Linfors, Eugene William (Johns Hopkins), Rodman, Canal Zone
Liptak, Gregory Stephen (Connecticut), Stratford, Connecticut
Lloyd, Douglas Seward (Duke), Suffield, Connecticut
Lynch, Phillip Irving, Jr. (Princeton), Pittsburgh, Pennsylvania
Maack, Walter Carl (Antioch), Woodstown, New Jersey
Major, Leslie Franklin (Rochester), Binghamton, New York
Margolis, Robert Jay (Rutgers), Pompton Lakes, New Jersey
Maulitz, Russell Charles (Imperial), Birmingham, Alabama
McConnell, David Moffatt, Jr. (Haverford), Chapel Hill, North Carolina
McCormick, Joseph Benford (Florida Southern), Georgetown, Indiana
McGuire, John O'Brien (Davidson), Charlotte, North Carolina
Miller, Donald Max (Florida State), Blountstown, Florida
Modlin, John Frederic (Duke), Columbia, Missouri
Nash, Michael Lawrence (State Univ. of New York at Stony Brook), Far Rockaway, New York
Neskodny, Jeane Marie (Radcliffe), Oak Brook, Illinois
Oates, Theodore Kensell (Washington and Lee), Martinsburg, West Virginia
Perlstein, Robert Stephen (Williams), New York, New York
Peterson, Eric Webster (Washington and Jefferson), Emporium, Pennsylvania
Podgainy, Helen Joan (Old Dominion), Norfolk, Virginia
Poindexter, James Randolph Gordon (Yale), Mt. Crawford, Virginia
Prince, Susan Robertson (North Carolina), Knightdale, North Carolina
Rapchik, Joel (Brooklyn), Brooklyn, New York
Rawl, John Callison (South Carolina), Lexington, South Carolina
Robertson, Lee Joslyn (Stanford), Santa Barbara, California
Ross, Charles William (Rutgers), North Bergen, New Jersey
Rothstein, Thomas Lane (George Washington), Arlington, Virginia
Rutherford, Richard Leslie (Notre Dame), Endwell, New York
Saikley, Garrett Frank (Johns Hopkins), Arlington, Virginia
Scardino, Peter Thomas (Yale), Savannah, Georgia
Schwartz, Martin Lerner (Pennsylvania), Philadelphia, Pennsylvania
Slater, Evan Dexter (Amherst), Riverside, Connecticut
Smith, Fredrica Emrich (Bryn Mawr), Atlanta, Georgia
Sontag, Kurt Warren (Colorado), Yellow Springs, Ohio
Stevens, Richard Carter (Columbia), Schenectady, New York
Thomas, Bernard Spencer (Johns Hopkins), Silver Spring, Maryland
Timmons, James McKnight, Jr. (Davidson), Columbia, South Carolina
Victor, Stephen Jan (Columbia), New York, New York
Wagner, William Orr (Duke), Upland, California
Walker, John Allen (Columbia), Brooklyn, New York
Walker, Leo Lauhon (Duke), Springfield, Virginia
Ward, Jonathan Melvin (Davidson), Charlotte, North Carolina
Waugh, Lyndon Dale (Dartmouth), Huntington, West Virginia
Welch, William Robert (Tufts), Newark, New York
Wilson, James Miller, III (Emory), Gainesville, Georgia
Wood, Eugene Walter (Tennessee), Millington, Tennessee

Class of 1970

Aksel, Sezer (Duke), Izmir, Turkey
Alpert, Eric David (Dartmouth), New Bedford, Massachusetts
Angelillo, John Charles (St. Louis), Durham, North Carolina

Austin, Thomas Edward (Florida), Umatilla, Florida
Ayars, Paul Kenneth, Jr. (Dartmouth), Bridgeton, New Jersey
Baggs, William Jerold (Duke), Reston, Virginia
Ball, John Robert (Emory), Auburn, Alabama
Ballenger, James Caudell (North Carolina), Raleigh, North Carolina
Black, Edward Barnwell (Univ. of the South), Greenville, South Carolina
Boaz, David Earnhardt (Pennsylvania State), Gainesville, Florida
Bost, Ronald Eugene (Maryland), Temple Hills, Maryland
Busby, Merle Rudy (Johns Hopkins), Salisbury, North Carolina
Campbell, Carlos Clinton, III (Haverford), Knoxville, Tennessee
Caughey, Dale Wells (Bucknell), Binghamton, New York
Clark, Arthur Watts, Jr. (Davidson), Durham, North Carolina
Coleman, Michael Dortch (Arkansas), Memphis, Tennessee
Comiter, Henry Joseph (Alfred), New York, New York
Conetta, Donald Anthony (New York), Stamford, Connecticut
Corless, Joseph Michael (Gorgetown), North Bergen, New Jersey
Engel, Peter Allen (Dartmouth), Rochester, New York
Everhart, Floyd Richard, Jr. (Princeton), West Palm Beach, Florida
Forth, Paul Taber, Jr. (Duke), Roanoke, Virginia
Ghanem, Elias Farid (North Carolina at Charlotte), Haifa, Israel
Gill, Lowell Harley (Gettysburg), River Edge, New Jersey
Gold, Philip William (Duke), Newport News, Virginia
Gordon, Robert (Brandeis), Coral Gables, Florida
Goscin, Stephen André (Princeton), Richardson, Texas
Green, Linda Darlene (Rice), Falls Church, Virginia
Gwynne, John Thomas (Princeton), Morgantown, West Virginia
Harrison, Thomas Edward (Tufts), Line Lexington, Pennsylvania
Hawkins, Hal Kenneth (Rice), Bartlesville, Oklahoma
Head, Harold David (Washington and Lee), Lexington, Virginia
Hoffman, Philip G. (Rice), Houston, Texas
Horton, John Andrew (Columbia), Harrison, New York
Jeffords, Dexter Lee (Duke), Roslyn, New York
Jenkins, Ewin Burrow (Tennessee), Knoxville, Tennessee
Jones, Edwin Lee, III (Duke), Charlotte, North Carolina
Karlin, Jan Victor (Harvard), Waterbury, Connecticut
Kelly, Gregory Allen (Vanderbilt), Knoxville, Tennessee
Kelly, James Reginald (South Carolina), Columbia, South Carolina
Kinney, Thomas Roberts (Duke), Durham, North Carolina
Kizer, John Stephen (Princeton), Charleston, West Virginia
Krackow, Kenneth Alan (Johns Hopkins), Durham, North Carolina
Kutner, William Alvin (State Univ. of New York at Fredonia), Dunkirk, New York
Labance, Michael John (Drexel Inst. of Tech.), Philadelphia, Pennsylvania
Lake, Charles Raymond (Tulane), Shreveport, Louisiana
Lewis, Barnett William (Davidson), Lakeland, Florida
Lord, Guy Russell, Jr. (Reed), San Francisco, California
Lord, Patricia Lawlor (Reed), Oakland, California
Marchand, Anthony (Connecticut), Greenwich, Connecticut
Marotta, Charles Anthony (City Coll. of New York), New York, New York
Marusov, Paul Nicholas (Rice), Verona, Pennsylvania
Mason, Janet (Mount Holyoke), Orange, New Jersey
Maw, Gilbert Maylon (Utah), Salt Lake City, Utah
McGuffin, William Lewis, Jr. (Georgia Inst. of Tech.), Greeneville, Tennessee
Miller, James Alan (Ohio), Charleston, West Virginia
Miller, Joseph Paul (Hull), Beaumont, Texas

Miller, Robert David (Davidson), Chapel Hill, North Carolina
Miller, Walter Luther (Massachusetts Inst. of Tech.), Nazareth, Pennsylvania
Mohl, Paul Cecil (Harvard), South Orange, New Jersey
Needel, Norman Howard (Rutgers), West Hyattsville, Maryland
New, William, Jr. (Stanford), Hillsborough, California
O'Neill, William Mansfield, Jr. (California), Albuquerque, New Mexico
Palko, Daniel Berhardt (Brown), Passaic, New Jersey
Pease, Howard Francis (Bowdoin), New Milford, Connecticut
Pfautz, Carolyn June (Houghton), Tarentum, Pennsylvania
Pizzo, Salvatore Vincent (St. Joseph's), Philadelphia, Pennsylvania
Reiley, Thomas Trevor (Purdue), Cincinnati, Ohio
Reynolds, Charles Philip, III (Purdue), Lake Forest, Illinois
Rogol, Alan David (Massachusetts Inst. of Tech.), Seymour, Connecticut
Scales, Susan Margaret (Rice), Colorado Springs, Colorado
Schmits, Walter Richard, Jr. (Rochester), Demarest, New Jersey
Schostal, Clifford J. (Rochester), Livingston, New Jersey
Shelburne, John Daniel (North Carolina), Raleigh, North Carolina
Silberberg, William Paul (Duke), Woodbridge, Connecticut
Silver, Carol Diana (Richmond), Richmond, Virginia
Smith, Forrest Owen (San Francisco State), Aliquippa, Pennsylvania
Smith, Harold A., Jr. (Colgate), Marlton, New Jersey
Smith, William Thomas (Hiram), Warren, Ohio
Sohn, Stephen Allan (Harvard), Newton, Massachusetts
Somers, William Robert (Duke), Oak Ridge, Tennessee
Stead, Nancy White (Duke), Durham, North Carolina
Tucker, William Kirkby (Johns Hopkins), Chevy Chase, Maryland
Waite, Robert Sears (Duke), Atlanta, Georgia
Walker, Margaret Bates (Duke), Durham, North Carolina
Waterbor, Robert Bertram (Harvard), Fairless Hills, Pennsylvania
Wexler, John Paul (Hobart), Brooklyn, New York

Class of 1969

Alexander, Robert Wayne (Emory), Atlanta, Georgia
Ayer, Frederick, III (Harvard), South Hamilton, Massachusetts
Bierfeld, James Louis (Duke), Highland Park, Illinois
Boylston, James Alan (South Carolina), Columbia, South Carolina
Budd, Daniel Claude (Rutgers), Hillsdale, New Jersey
Carmalt, E. Duane (Johns Hopkins), Ft. Lauderdale, Florida
Cato, Allen E., Jr. (Duke), Durham, North Carolina
Chang, Jack Han-Teh (Duke), New York., New York
Cheek, Jack Allan, Jr. (North Carolina), Greensboro, North Carolina
Cohen, Harvey Joel (Brooklyn College), Durham, North Carolina
Cook, Jay David (Purdue), Hammond, Indiana
Crowe, John Kenyon (Earlham), Cape Girardeau, Missouri
Cruikshank, Dwight Phelps, IV (Duke), Parkersburg, West Virginia
Davis, Arthur Brian (North Carolina State), Raleigh, North Carolina
deVito, Peter Carl (Princeton), Glen Ridge, New Jersey
Dixon, Richard Hoyt (Bowdoin), Belmont, Massachusetts
Dunn, Neil Marshall (Carleton), Kingsville, Texas
Edwards, Diane Rose (Smith), Wantagh, New York
Elson, Melvin Leslie (Tennessee), Chattanooga, Tennessee

English, Thomas Leon (Yale), East Point, Georgia
Entmacher, Michael Samuel (Franklin of Marshall), Levittown, New York
Fauntleroy, Thomas Waring, Jr. (Washington & Lee), Corapolis, Pennsylvania
Foster, Charles Stephen (Duke), Durham, North Carolina
Fox, James Wesley (Stanford), Carmichael, California
Gagliano, Angelo Vincent (Boston), New York, New York
Gellar, Richard (Columbia), Brooklyn, New York
Gentzler, Richard David, II (Franklin & Marshall), Spring Grove, Pennsylvania
Gervin, Alfred Spencer (Milligan), Emory, Virginia
Giles, Harlan Raymond (Duke), Avondale Estates, Georgia
Goldberg, Bertram (U. S. Military Academy), Melrose Park, Pennsylvania
Grimson, Baird Sanford (Washington & Lee), Durham, North Carolina
Gruenwald, Charles (Indiana), Martinsburg, West Virginia
Haberkern, Roy Conrad, III (Haverford), Garden City, New York
Henderson, Richard Albert, Jr. (Sacramento State), Fair Oaks, California
Hill, David Peter (Wheeling), Wheeling, West Virginia
Hoover, Eddie Lee (North Carolina), Charlotte, North Carolina
Horten, Bruce Carl (Drew), Fort Mill, South Carolina
Jackson, Don Jobe (Tennessee), McKenzie, Tennessee
Jenkins, James Hobart (Southern Illinois), Urbana, Illinois
Johnson, James Fred (George Washington), Washington, D. C.
Karsh, Richard Bruce (Williams), East Rockaway, New York
Keats, Philip K. (Dartmouth), Jersey City, New Jersey
Kernodle, Harold Baker, Jr. (Davidson), Burlington, North Carolina
Kirkpatrick, Douglas Bernard (Oberlin), Yellow Springs, Ohio
Koff, Stephen Andrew (Duke), Long Beach, New York
Lawrence, Dale Nolan (Cincinnati), Cincinnati, Ohio
Levie, Benton Bains (Vanderbilt), Albertville, Alabama
Levy, Steven Ted (Queens), Forest Hills, New York
Lonon, Robert Warren, Jr. (Duke), Charlotte, North Carolina
Malone, Charles Bruce, III (Harvard), Arlington, Texas
Marafioti, Richard Lynn (Harvard), Rochester, New York
Marger, Donald (Duke), Miami, Florida
Marotta, Charles Anthony (City College of New York), New York, New York
Masters, Stuart Jeffrey (Hamilton), Roslyn Heights, New York
Megna, Daniel (Duke), Staten Island, New York
Meyer, Alan Howard (Duke), Great Neck, New York
Moore, Dan Cockrill (Duke), Memphis, Tennessee
Moorefield, William Guerrant, Jr. (Duke), Durham, North Carolina
Morawetz, Richard Bacon (Emory), Marietta, Georgia
Morris, Mary Hagan (Bucknell), Ankara, Turkey
Newman, Larry Bernard (Pennsylvania), Memphis, Tennessee
Pfautz, Carolyn June (Houghton), Tarentum, Pennsylvania
Ramsey, Maynard, III (Emory), Tampa, Florida
Remigailo, Richard Vladimir (Duke), Arlington, Virginia
Rienstra, Joseph Douwe (Duke), Arlington, Virginia
Rowe, Vernon Dodds, III (Duke), Hendersonville, North Carolina
Rummo, Nicholas John (Dartmouth), Brooklyn, New York
Smith, Charles Donovan (Princeton), Memphis, Tennessee
Tremaine, Myron David (U. S. Naval Academy), Fayetteville, North Carolina
Utley, Henry Griffith (Duke), Durham, North Carolina
Valiant, Martha Eloise (Miami), Durham, North Carolina
Valle, David Lee (Duke), Durham, North Carolina
Volberg, Frank Marshall, Jr. (Duke), Kingsport, Tennessee

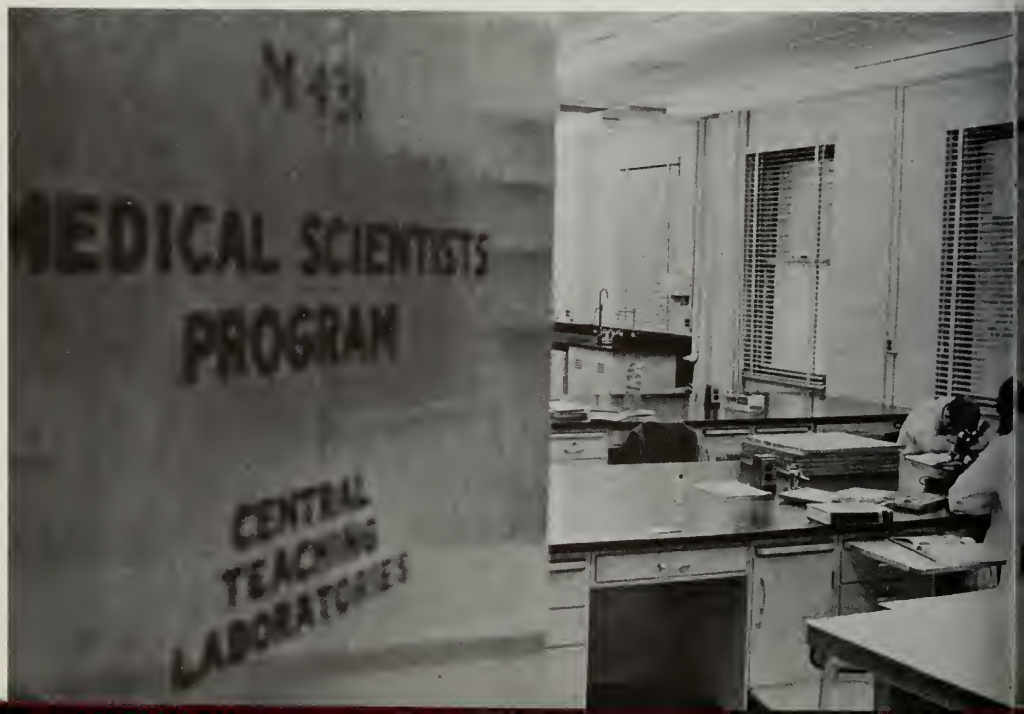
Waggoner, David Michael (Duke), Grosse Point, Michigan
Wexler, John Paul (Hobart), Brooklyn, New York
Whitfield, Richard Wriston (Harvard), Greenwich, Connecticut
Williams, Randal James (Stetson), Ft. Myers, Florida
Wise, Thomas Nathan (Dartmouth), Washington, D. C.
Zavelson, Thomas Michael (Duke), Mansfield, Ohio

Class of 1968 with Internship Appointments

Arons, Michael James (Stamford, Conn.), Grady Memorial Hosp., Atlanta, Georgia
Atknson, John Pepper (Macon, Ga.), Eugene Talmage Memoral Hosp., Augusta, Georgia
Baylin, Stephen Bruce (Durham, N.C.), Duke Hospital, Durham, North Carolina
Bickers, Peter W. (Tampa, Fla.), Ben Taub Childrens Hospital, Houston, Texas
Block, Michael Allen (Irvington, N.J.), Mount Sinai Hospital, New York, New York
Brickman, Martin James (Marblehead, Mass.), Duke Hospital, Durham, North Carolina
Carlton, Bruc Ronald (Great Neck, N.Y.), Ohio State University Hospitals, Columbus, Ohio
Chotiner, Gerald (McKeesport, Pa.), Childrens Hospital of Pittsburgh, Pittsburg, Pennsylvania
Cook, Joseph William, Jr. (Charlotte, N.C.), Duke Hospital, Durham, North Carolina
Crosson, Ann Ward (Charlotte, N.C.), Childrens Hospital Medical Center, Boston, Massachusetts
Damiano, Richard Ernest (Brooklyn, N.Y.), Presbyterian Medical Center, San Francisco, California
Duttera, Maurice Julian, Jr. (West Point, Ga.), Grady Memorial Hospital, Atlanta, Georgia
Edwards, Sam Bingham, Jr. (Sanford, N.C.), University of Minnesota Hospital, Minneapolis, Minnesota
Eisenberg, Carl Spencer (Euclid, Ohio), St. Louis Childrens, St. Louis, Missouri
Ellwanger, Frederick Robert, III (Pittsburgh, Pa.), Naval Hospital, Chelsea, Massachusetts
Elmore, William Glenn (Durham, N.C.), Duke Hospital, Durham, North Carolina
Elsas, Frederick John (Birmingham, Ala.), Duke Hospital, Durham, North Carolina
Emslie, Robert Joseph (Elyria, Ohio), University of Chicago Hospital & Clinics, Chicago, Illinois
Entman, Stephen Saul (Jacksonville, Fla.), Childrens Hospital Medical Center, Boston, Masschusetts
Fahy, Hugh Terrance (Liverpool, N.Y.), Denver General Hospital, Denver, Colorado
Fee, William Homer, Jr. (Rockaway, N.J.), York Hospital, York, Pa.
Flaherty, Lois Talbot (Staten Island, N.Y.), Program 1—Georgetown University, Washington, D.C.
Foscue, Henry Armfield, Jr. (High Point, N.C.), William A. Shands Teaching Hospital, Gainesville, Florida
Freeman, Douglas Garland, Jr. (Gates, N.C.), University of Alabama Medical Center, Birmingham, Alabama
Freeman, Elsie Lachenmayr (Valley Stream, N.Y.), Childrens Hospital Medical Center, Boston, Massachusetts
Freeman, Jonathan (Palo Alto, Calif.), Beth Israel Hospital, Boston, Massachusetts
Goldenberg, Robert Lewis (North Miami Beach, Fla.), Duke Hospital, Durham, North Carolina

Goodner, David Marshall (Rio Piedras, Puerto Rico), Germantown Hosp., Philadelphia, Pennsylvania
Green Richard Lee (Pittsburgh, Pa.), University Hospitals of Cleveland, Cleveland, Ohio
Haberkern, Robert Paul (Highland Park, N.J.), George Washington Univ.—D.C. General, Washington, D.C.
Hall, James Hardman (Danville, Va.), Duke Hospital, Durham, North Carolina
Hart, John Martin Hicks (Durham, N.C.), Duke Hospital, Durham, North Carolina
Henley, Thomas Franklin (Chapel Hill, N.C.), Ohio State University Hospitals, Columbus, Ohio
Henry, David Patterson, II (Chapel Hill, N.C.), Duke Hospital, Durham, North Carolina
Holberg, Doris Gayle (Houston, Texas), Ben Taub Childrens Hospital, Houston, Texas
Hopkns, Jay Everett (Durham, N.C.), Harrisburg Polyclinic, Harrisburg, Pennsylvania
Hutchinson, Forney, III (Tulsa, Okla.), Duke Hospital, Durham, North Carolina
Hyers, Thomas Morgan (Palatka, Fla.), Cleveland Metropolitan General, Cleveland, Ohio
Jackson, Gitta Wiessner (Berlin, Germany), Sacred Heart Hospital, Pensacola, Florida
Johnson, Laurance Folkey (Springfield, Ill.), St. Mary's Hospital, San Francisco, California
Jones, Dennis Eblen Darnell (Knoxville, Tenn.), Duke Hospital, Durham, North Carolina
Jones, Howard Wilbur, III (Baltimore, Md.), Colorado Medical Center, Denver, Colorado
Katz, David Harvey (Portsmouth, Va.), Johns Hopkins Hospital, Baltimore, Maryland
Kern, Frank (Baltimore, Md.), York Hospital, York, Pennsylvania
Kirkland, Rebecca Trent (Durham, N.C.), Ben Taub Childrens Hospital, Houston, Texas
Kunstling, Ted Richard (Boonville, N.C.), Vanderbilt University Hospital, Nashville, Tennessee
Kwart, Arnold Martin (Miami, Fla.), Bellevue—New York University, New York, New York
Lebbin, Dennis Roy (Chicago, Ill.), Presbyterian—St. Luke's, Chicago, Illinois
Levy, Bertram Joseph (Roosevelt, N.Y.), Palo Alto Stanford Hosptal Center, Palo Alto, California
Logan, William Sumner (Lakeland, Fla.), Duke Hospital, Durham, North Carolina
Mandetta, Donald Frank (Glen Rock, N.J.), Duke Hospital, Durham, North Carolina
Miller, Richard Lawrence (Patchogue, N.Y.), Maimondides Medical Center, Brooklyn, New York
Moore, Terence Neal (Ravenel, S.C.), Wilford Hall USAF Hospital, Lackland AFB, Texas
Morton, Robert Edmund (Mamaroneck, N.Y.), Ohio State University Hospitals, Columbus, Ohio
Older, Robert Alan (West Englewood, N.J.), Veteran's Admin.—Georgetown Service, Washington, D.C.
Park, William Isaiah, III (Springfield, Mo.), Barnes Hospital, St. Louis, Missouri
Parker, Michael Dean (Madison, Ind.), Duke Hospital, Durham, North Carolina
Peery, Charles Vance, II (Kinston, N.C.), Duke Hospital, Durham, North Carolina
Plonk, James Wendell (Kings Mountain, N.C.), Barnes Hospital, St. Louis, Missouri
Porter, Roger John (St. Petersburg, Fla.), San Diego County—University, San Diego, California
Reisman, Terence Nat (Miami, Fla.), Grady Memorial Hospital, Atlanta, Georgia

Sarver, Edward John (Fort Wayne, Indiana), Henry Ford Hospital, Detroit, Michigan
Seligson, David (Brookline, Mass.), Boston City Hospital, Boston, Massachusetts
Seningen, Ronald Perry (Newark, Delaware), Duke Hospital, Durham, North Carolina
Sherwood, Geoffrey Kray (Portland, Conn.), Boston City Hospital, Boston, Massachusetts
Silvers, David Nathan (Roslyn Heights, N.Y.), Bellevue—New York University, New York, New York
Simpson, Joe Leigh (Jackson, Miss.), The New York Hospital, New York, New York
Snider, Joel J. (Brooklyn, N.Y.), Temple University Hospitals, Philadelphia, Pennsylvania
Sollek, Mark G. (Cincinnati, Ohio), Ohio State University Hospitals, Columbus, Ohio
Stasikowski, Jacek Jan (Cleveland, Ohio), Bellevue—New York University, New York, New York
Stucky, Robert Christopher (Glen Rock, N.J.), Baltimore City Hospital, Baltimore, Maryland
Taft, Charles Van (Greenville, N.C.), Duke Hospital, Durham, North Carolina
Taylor, Andrew Thompson, Jr. (Jackson, Tennessee), University of California, San Diego, California
Thurston, Thomas Gardiner, III (Salisbury, N.C.), Grady Memorial Hospital, Atlanta, Georgia
Utley, John Dement (Dixon, Ill.), U.S. Naval Hospital Marine Corps Base, Camp Pendleton, California
Wald, Harlan Ira (Scarsdale, N.Y.), University Hospitals of Cleveland, Cleveland, Ohio
Wheeler, William Felix, Jr. (Blackville, S.C.), San Diego County—University, San Diego, California
Wilson, James Walter (Louisville, Kentucky), Duke Hospital, Durham, North Carolina
Wohlgemuth, Stephen A. (Long Valley, N. J.), Emory University Hospital—Veteran's Administration, Atlanta, Georgia
Wynne, Marigail (Scarsdale, N.Y.), Medical College of Virginia, Richmond, Virginia



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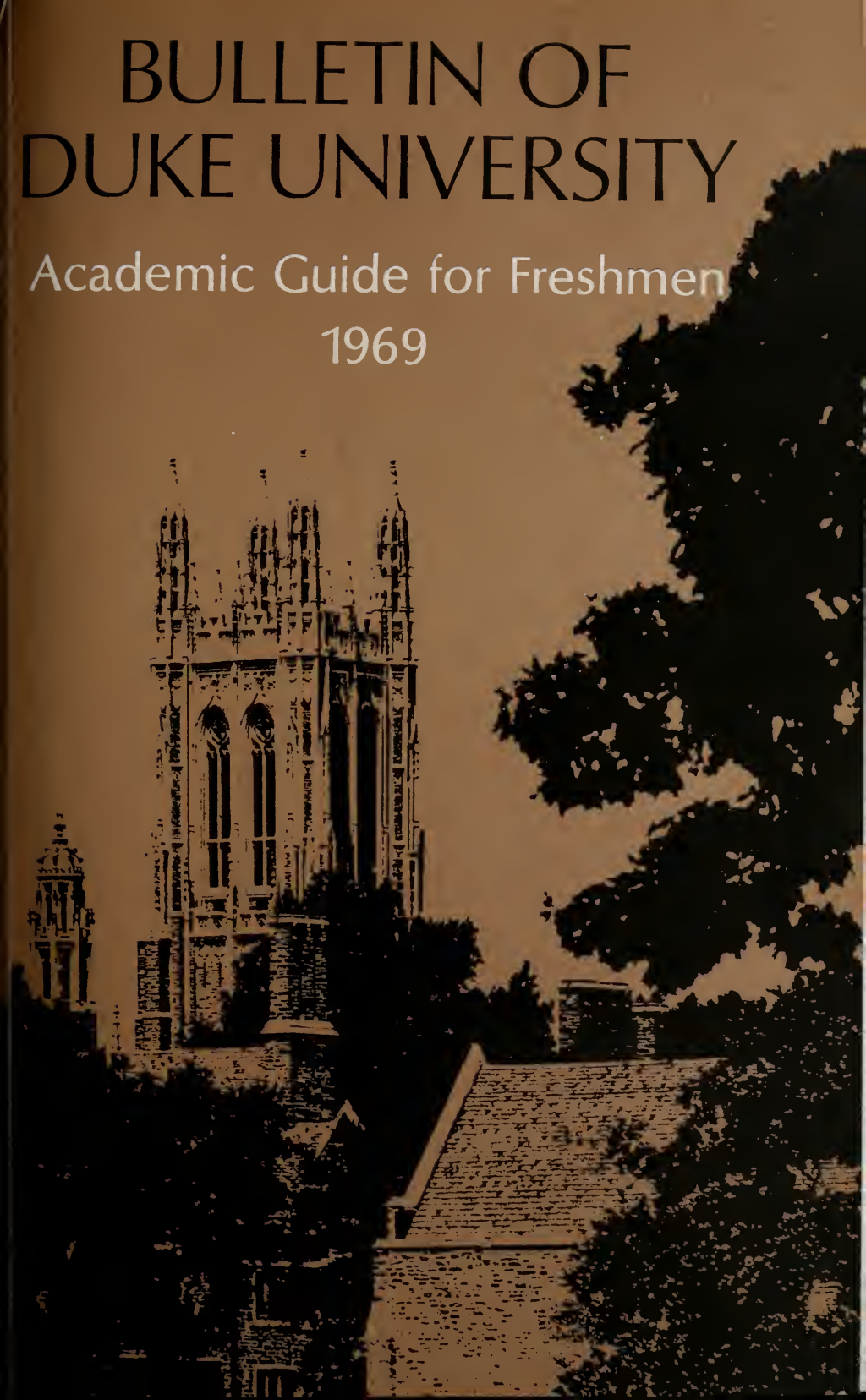
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BULLETIN OF DUKE UNIVERSITY

Academic Guide for Freshmen

1969



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Volume 41 June 1969 No. 8

The **Bulletin of Duke University** is published monthly except in July, August, September, and December by Duke University, Duke Station, Durham, N. C. 27706. Second-class postage paid at Durham, N. C.

Cover design is a line conversion photograph of the Chapel.

BULLETIN OF DUKE UNIVERSITY

Academic Guide for Freshmen 1969

THE SCHOOL OF ENGINEERING
THE SCHOOL OF NURSING
THE WOMAN'S COLLEGE
TRINITY COLLEGE

Durham, North Carolina 1969

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Summer preregistration for fall semester:	
preregistration materials mailed to freshmen	June 2-3
preregistration cards returned by freshmen	Prior to July 1
Freshman week booklets mailed to freshmen	After August 15
Freshman week begins	September 16
Dormitories open for occupancy 9 a.m., September 16 (not before). Duke Placement Tests administered at 1:30 p.m., September 16	
Final registration for freshmen	September 18
Fall semester classes begin	September 22
Advisory grade reports due from instructors for freshmen	November 1
Preregistration for spring semester	November 10-13
Thanksgiving recess begins, 12:30 p.m.	November 26
Classes resume, 8:10 a.m.	December 1
Christmas recess begins, 12:30 p.m.	December 20
Classes resume, 8:10 a.m.	January 5
Classes end, 12:30 p.m.	January 10
Final examinations begin	January 14
Final examinations end	January 23
Final registration for spring semester	January 30
Spring semester classes begin	February 2

Introduction

This *Academic Guide* is designed to assist freshmen entering Duke University in September, 1969, in their selection of courses for the fall semester and to provide a basis for the planning of academic programs in the spring semester and in subsequent years. The first chapter is specifically for freshmen entering The School of Engineering; the second, for those enrolling in The School of Nursing; and the third, for students in The Woman's College and Trinity College. The remaining chapters are relevant to all freshmen regardless of the school or college in which they are to enroll, and should be used as a basis of course selections and summer preregistration.

In addition to the *Academic Guide for Freshmen,* a mimeographed compilation of "Departmental Courses and Major Requirements" (1969) has been forwarded to all freshmen. This compilation contains additional information regarding courses offered by the academic departments and the requirements for majoring in those departments. Each freshman in The School of Nursing has also been sent the *Bulletin of The School of Nursing.*

In the pocket inside the back cover of the *Academic Guide* are preregistration cards for the fall semester, 1969. These cards must be completed and returned to the dean of the appropriate school or college by July 1. Before completing the cards, please read the chapter on Summer Preregistration Procedure of the *Academic Guide*, as well as the Instruction Card which accompanies the preregistration cards. Return the cards to the appropriate school or college in the envelope provided for that purpose.

The School of Engineering

The Profession of Engineering

The ultimate purpose of engineering is to bring into being new devices, machines, processes, and structures which contribute progressively to the development of civilization, and to do so at a minimum cost in time and money. Central to this concept of engineering is that of creativity.

The unique contribution of the professional engineer, that of feasible and creative design, revolves around the effective putting together, or synthesis, of ideas and information relevant to the problem at hand. Characteristics of the engineering process are uniqueness or improved function, best possible use of people and materials, and practicality. Essential to the successful fulfillment of the engineering function are an adequate knowledge of both existing and new scientific information, an ability to combine this information effectively, an understanding of production processes and fabrication methods, and the exercise of professional responsibility for the welfare and protection of people.

Whereas engineers as individuals may perform specialized services within the total science-technology spectrum, it is the feasible, creative design concept which provides purpose, perspective, and incentive in engineering activity. Research and development, management, production, sales and services, and teaching are all important engineering activities as they occupy supporting roles to the central creative purpose of engineering.

It is essential to distinguish the aims of engineering from those of science. Although these fields are closely interdependent, their objectives are fundamentally different. Science is involved in the quest for knowledge, engineering in its use. The scientist seeks to understand and describe clearly and rigorously the laws which govern the behavior of the physical world. In contrast, the engineer seeks to devise a practical solution to a human need and must make many compromises and judgments of value in doing so. His use of science and mathematics is an important means to this end.

The dependency of engineering on mathematics and science has increased greatly in recent years and promises to continue to grow. For this reason the engineer needs a strong background in these fields.

Majors in Engineering Studies

The programs in engineering at Duke are directed toward the following objectives:

1. To produce engineers who will be able to function at the highest professional level, not only today, but for several decades, regardless of the scientific advances that the future may bring.
2. To produce engineers who can function intelligently within the economic and social framework of our culture—persons who are able to look from the past through the present into the future in terms of material wants and needs, and who are able to organize the human effort and financial resources necessary to provide the machines, goods, structures, and services that will meet those needs and wants.
3. To produce engineers who recognize their responsibilities as citizens of their communities.
4. To produce engineers who seek to continue aesthetic, ethical, intellectual, and spiritual growth.

To meet the first objective, the programs seek to provide a fundamental understanding both of the science of engineering, which is based on mathematics and the physical sciences, and of the art of engineering, which depends on human imagination and judgment. This objective is served primarily by the required and elective courses in mathematics, chemistry, physics, and engineering. The last three objectives are served by various aspects of the extracurricular program, including those of the general university program.

A prime requirement for successful practice of engineering is the ability to communicate facts and ideas. The engineer must be able to listen and read and to speak and write with precision, clarity, and understanding. Consequently, certain courses designed to improve the ability

to communicate are recommended, and effective graphical representation, writing, and speaking is expected in all course work.

The engineering curriculums lead to the degree of Bachelor of Science in Engineering following the completion of four years of study and provide opportunity for majors in the professional fields of civil, electrical, and mechanical engineering, as well as in interdisciplinary fields such as biomedical engineering.

A program of honors work leading to Graduation with Distinction is available in any of the majors in the senior year.

The fields of civil, electrical, mechanical, and biomedical engineering are briefly described in the paragraphs which follow.

Civil Engineering

Civil Engineering is viewed normally as the art of conception, design, analysis, and building of constructed facilities; the modern civil engineer finds himself equally engaged in problems such as trafficability of planetary surfaces, exploitation of mineral deposits of ocean bottoms, or optimization of an urban transportation system. There are six major specialty areas of civil engineering. *Hydraulic* and *Ocean Engineering* deals with development and use of water and marine resources, including such diverse activities as multi-purpose reservoir development for flood control, hydroelectric power production, navigation, irrigation, and recreation purposes, or facilities for wasteways, locks, river regulation, drainage, harbor development, coastal and tidal protection works, and offshore and submerged structures for marine resource development. *Structural Engineering* is concerned with economical and safe design of all kinds of engineering structures such as public and industrial buildings, bridges, telecommunication and industrial towers, concrete dams, as well as aerospace and marine facilities such as radio-telescopes, missile launching pads, and shore structures. *Transportation Engineering* deals with problems of design and construction, maintenance, and administration of traffic facilities such as railroads, highways, airports, waterways, pipelines, and subways, as well as with planning and management of transportation systems. *Geotechnical Engineering* is concerned with interaction between engineering structures and the earth's crust, with particular emphasis on foundations and underground structures, as well as on structures constructed of earth as material (earth dams, highways, and airfield subgrades). *Sanitary Engineering* deals with human environment and includes consideration of economic and health aspects of municipal and industrial water supply, wastewater treatment and disposal, solid wastes and the impact of intensive utilization of land, water, and air resources on their ability to sustain urban growth. *Urban Engineering* encompasses a spectrum of integrated technological problems of urban areas such as land and city planning and development, mass transportation, and public health and safety.

Graduates of civil engineering curriculums, particularly those with advanced degrees, find employment with consulting offices, construction firms, industries, and federal, state, and local government. However, many civil engineers engage in private practice as consulting engineers and independent designers, as well as in management planning, research, and teaching.

Electrical Engineering

Electrical Engineering utilizes the electric and magnetic forces of nature and the properties of matter to supply human needs. Because electricity is the most flexible form of energy available to man, electrical engineering influences the lives of most of the world's population. This profession is concerned with the processing and transmitting of information—as in television, radar, radio, electronic measurement, and computation. It is equally concerned with the processing, transmitting, and controlling of energy—as in rotating machines, power systems, and automatic industrial processes. It provides most of our labor-saving home appliances and many of the instruments of scientific research and modern medical practice.

Mechanical Engineering

Mechanical Engineering is concerned with the design and fabrication of machines for the production of useful energy or the processing of materials as well as the development of new sources of power, propulsion, and transport. Included are the familiar internal combustion engine, steam turbine, nuclear reactors, and jet engines in use today, as well as fuel cells, thermionic and thermoelectric energy conversion, magneto-hydrodynamic power, ion and plasma engines, and other new energy systems not yet known. The exploration of outer space and the depths of the oceans present challenging new problems. Further, there is the all important task of providing the technological requirements of an ever-increasing population, with its demands for new products in food, shelter, comfort, entertainment, and work-saving devices.

The curriculum in mechanical engineering has been planned to bridge the gap between the basic sciences, on the one hand, and the machine or process to be developed, on the other. It is intended to prepare the individual particularly for a career in: (1) research and development; (2) design; (3) production, manufacturing, and operation; and (4) management.

Biomedical Engineering

Biomedical engineering is often defined as the application of the concepts and methods of the physical, mathematical, and engineering sciences

to biology and medicine. This definition covers a very broad spectrum ranging from formalized mathematical theory through experimental science to practical clinical applications. The purpose of the undergraduate program in biomedical engineering is to permit undergraduate engineering students who plan to dedicate their professional careers to the biomedical area to prepare themselves adequately for graduate work in biomedical engineering, medicine, or biology. This program is flexible and satisfies the requirements for entrance to either graduate work in biomedical engineering or to medical school.

Interdisciplinary Major in Engineering

This major parallels the programs in civil, electrical, mechanical, and biomedical engineering and, subject to faculty approval, is offered in selected areas such as engineering mechanics, energy conversion, materials, and systems, and controls.

Engineering Courses and Suggested Program for Freshmen

See insert entitled "Engineering Courses and Suggested Program for Freshmen."

The School of Nursing

The Curriculum

The School of Nursing offers a baccalaureate program to prepare persons for beginning positions in professional nursing and to provide the foundation for graduate education. Graduates receive the Bachelor of Science in Nursing degree and are eligible to apply for licensure in any state.

The baccalaureate program is designed to produce a professional nurse who has (1) an understanding and appreciation of man and his relationships, opportunities, and responsibilities in his dynamic environment, and (2) the knowledge, understanding, and skill essential in professional nursing. Studies in the freshman and sophomore years are devoted primarily to the liberal arts and basic sciences; during these years, co-curricular activities are provided to introduce the student to nursing. The focus of the junior and senior years is the nursing major.

For graduation a student must have passed at least 32 semester-courses (or a combination of semester-courses, half-courses, and double-courses that would be equivalent to 32 semester-courses), including the approved curriculum. A student must have passed a minimum of 14 semester-courses before entering the upper division professional curriculum.

Lower Division

The following standard course requirements are included as lower division (freshman and sophomore years) course work:

Natural Science	2 courses
Humanities	1 course
Social Science (Sociology or Anthropology and Psychology)	3 courses
Human Ecology (N96, 97)	2 courses
Basic Statistics	1 course
Physical Education	.....
English Composition	.....
	9 courses

The student is required to demonstrate her ability to write good English either by presenting a score of 700 or higher on the CEEB English Composition Achievement Test or by passing a one semester-course in English composition, which she should take in her first semester.

The physical education requirement may be met by the satisfactory completion of two years in appropriate physical education courses or by an alternate form of physical activity approved by the physical education department. The student must fulfill this requirement before entering the professional curriculum (upper division).

The remaining elective courses (approximately seven semester-courses) of the lower division are selected by the student, with assistance and approval from her academic adviser, in accordance with her goals and interests.

Each student is required to have the following varieties of learning experiences, to be fulfilled at some time during the freshman and/or sophomore years:

1. A seminar in one semester, or
2. Two preceptorials, discussion sections, or tutorials.

These learning experiences are defined on page 18 of this *Guide*.

Selection of Courses for the Fall Semester, 1969

Four courses, in addition to physical education, are the normal academic load per semester.

As previously mentioned, students must demonstrate their skill in English composition or take a one semester course in English composition in the first semester. Another course—an elective—may be selected from any of the courses open to freshmen, but should be chosen with con-

sideration to personal and professional educational goals. A student may elect concentration in a special area of study or exploration in several fields. Human Ecology (N96, 97) and Basic Statistics are normally taken in the sophomore year. At some time during the freshman and/or sophomore year one seminar or two preceptorials, discussion sections, or tutorials must be completed. A suggested program for the year is listed below.

Suggested Program for Freshmen

Fall Semester		**Spring Semester**	
Course	*Number of courses*	*Course*	*Number of courses*
Natural Science (biology, chemistry, physics, geology)	1	Natural Science	1
Sociology-Anthropology	1	Psychology	1
Two other courses (requirements or electives; see paragraph above)	2	Two other courses (requirements or electives; see paragraph above)	2
Physical Education	—	Physical Education	—
Total	4	Total	4

See the chapter on pages 48-100 of this *Academic Guide* for course offerings open to freshmen, as well as the mimeographed "Departmental Courses and Major Requirements" sent with it. Also refer to the chapters related to placement in advanced courses and preliminary registration for the fall semester. *The Bulletin of The School of Nursing* contains additional information.

The Woman's College and Trinity College

The Curriculum: Two Approaches to an Undergraduate Degree

Starting with the academic year 1969-70, a new undergraduate curriculum will be available to students entering The Woman's College and Trinity College. As a program of studies leading to either the A.B. or B.S. degree, the curriculum provides two distinctive approaches to each degree—Program I and Program II.

Program I

Program I provides a flexible approach to the A.B. or B.S. degree by enabling a student to choose within broadly stated requirements the particular academic subject matter which best satisfies his intellectual interests and educational goals. Although specific requirements exist regarding proficiency in English composition and foreign language and in physical activity, optional methods of satisfying those requirements are provided. Through a variety of small-group learning experiences and independent study, Program I assures each student the opportunity to undertake at least a portion of his undergraduate study in closer as-

sociation with faculty and fellow students than may normally be provided in regular classroom instruction and large lectures. A detailed description of Program I is given below.

Semester-Courses: Normal Course Load and Graduation Requirement

The unit of academic instruction and credit under Program I is the semester-course (s.c.), which generally consists of three to four hours of instruction each week of the semester. Parts and multiples of the semester-course are also recognized, such as half-courses and double-courses. Four semester-courses per semester are considered the normal course load for each student. To graduate with either the A.B. or B.S. degree, a student must receive credit for thirty-two semester-courses or their equivalent in terms of half-courses and double-courses.

Distributional Requirements

Program I enables a student to achieve breadth of academic and intellectual experience by requiring that he complete a number of semester-courses in each of the three divisions into which the academic departments of the University are grouped. The courses selected in each division must be those in which the essential subject matter and substance of the discipline are presented; thus, no introductory skill courses may be used to satisfy distributional requirements. (See the section below concerning Limitation Regarding Skill Courses.) The three divisions and the academic departments within each are:

Humanities: Art, Classical Studies (including Greek and Latin), English, Germanic Languages and Literature, Music, Philosophy, Religion, Romance Languages (including French, Italian, Portuguese, and Spanish), and Slavic Languages and Literatures (including Russian).

Natural Sciences and Mathematics: Botany, Chemistry, Geology, Mathematics, Physics, and Zoology.

Social Sciences: Business Administration, Economics, Education, History, Political Science, Psychology, and Sociology and Anthropology.

Number of Semester-Courses Within Each Division. The number of courses which a student must pass in each of the three divisions is as follows:

First division. Each student must concentrate (or major) in a single discipline or in an interdisciplinary program. He will thereby be required to take a number of courses in that discipline or in that interdisciplinary program, as determined by the department or departments concerned. In so doing he will automatically complete courses in one of the three divisions described above. The division of the concentration or major is

called the first division. For example, a student concentrating or majoring in chemistry will have selected natural sciences and mathematics as his first division and will be required to pass a number of courses in chemistry as specified by the Department of Chemistry and approved by the faculty. By passing those courses, he will automatically satisfy the distributional requirements of the first division. To determine how many courses a particular department requires for a major, a student should consult the departmental statement of major requirements in the mimeographed compilation sent with this *Academic Guide*.

Second division. A student must pass at least four semester-courses in a second division of his own choice. None of these courses may be skill courses. (See section below regarding skill courses.) At least two of the four courses must be at the advanced level. Normally advanced-level courses are numbered in the 100- and 200-series, although there is some variation among the various departments. To satisfy this requirement, a student may select all four courses from one department within the division, or he may distribute the courses among two or more departments. Specifically, the student in the above illustration who majors in chemistry may choose social sciences as his second division and may also decide to satisfy the four-course requirement within that division by taking Economics 1, 2 (two semester-courses) in his freshman year and two advanced courses in economics in the 100-series in subsequent years. On the other hand, having taken Economics 1, 2 in the freshman year, he may elect to take a 100-series course in each of two other departments in the social sciences division in later years. In this case, however, the student may find that there are prerequisite courses which he must have before he is permitted to take the desired 100-series courses. For example, should this student, having completed Economics 1, 2, decide in his junior year to take Business Administration 120 as one of the two advanced courses required in the second division, he will discover that Business Administration 50 and 60 are prerequisites for 120. Not all advanced courses have prerequisites as in this illustration; however, many do, and a student must consider this factor as he plans his advanced course choices for the future. To determine requirements for admission to advanced courses in a particular department, a student should consult that department's description of courses and their prerequisites in the mimeographed compilation.

Third division. A student must pass at least two semester-courses in a third division of his own choice. The courses may be at the introductory or advanced level; but, again, no skill courses may be used to satisfy the requirement. Both courses may be taken in one department within the division, or one course may be selected from each of two departments. In the latter case, however, a student should first determine that the course chosen is not part of a sequence of two courses (a so-called hyphenated course), both of which must be taken to obtain credit for either

course. He should also know the prerequisites for admission to courses which he selects. Again, the student in the above illustration, who by majoring in chemistry selects natural sciences and mathematics as his first division and who chooses social sciences as his second division, will automatically select humanities as his third division for distributional purposes. To meet the two semester-course requirement within the humanities division, he may elect to take Philosophy 41 and Philosophy 93 sometime during the junior and senior years. Since the Department of Philosophy does not require prerequisites for either 41 or 93, this student may be admitted to both courses and may satisfy the two semester-course requirement of the third division. Or he may choose to take Philosophy 41 in his sophomore year and then English 148 in his junior year. In the case of English 148, however, he will find that English 55-56 are prerequisites to enrollment. He must either select another course in the humanities division to which he can be admitted without prerequisites or, in order to take English 148, he must first take English 55-56 and later enroll in 148. If he chooses the latter example, he will acquire credit for four semester-courses in the humanities division (Philosophy 41, English 55-56, and English 148), or two more than the requirement. Such credit is perfectly acceptable under the distributional requirements, since the number of courses required for division three, as well as for the other two divisions, is a minimal requirement which may be exceeded if the student's total program of courses for four years permits.

Limitation Regarding Skill Courses. As noted previously, there is one general limitation upon the choice of courses for distributional purposes: Elementary skill courses may not be used to satisfy the distributional requirements in any of the three divisions. Rather, the courses must be those which present the essential subject matter and substance of the discipline in which the courses are found. For instance, neither English composition nor elementary foreign language courses count as courses in humanities, because developing skill in composition or speech is different from encountering linguistics or literature. Such courses, therefore, cannot be taken to satisfy distributional requirements in the humanities division. A similar restriction applies to the courses listed below. In planning course selections to meet distributional requirements, students should consult this list, not for purposes of avoiding such courses, but rather to assure that courses chosen to meet distributional requirements actually serve that purpose.

*Skill Courses That Do Not Satisfy Distributional Requirements in Program I**

Department	*Courses*
Art	53-54, 55, 56, 155, 156, 157, 158, 159, 160
Chinese	101-102 (U.N.C.), 131, 132, 133, 134
Classical Studies	Greek 1-2, 63-64; Latin 1-2, 63-64

Education	105, 106, 107, 108, 151, 152, 153, 154, 161, 162, 195, 196, 201, 203, 210, 215, 216, 225, 226, 236, 237, 239, 241, 246, 266, 276
English	1, 65-66, 51, 93, 101, 103-104, 121, 122, 151
Germanic Languages and Literature	1-2, 63-64, 117, 118
Hindi-Urdu	181, 182, 183, 184
Japanese	151, 152, 153, 154
Music	5-6; 57-58; 15; 145-146; 151; 152; 153; 154; Applied Music (47, 48, 97, 98, 147, 148, 197, 198)
Psychology	117
Romance Languages	French 1-2, 63-64, 97, 98, 181 Italian 181 Portuguese 181 Spanish 1-2, 63-64, 97, 181
Slavic Languages and Literatures	1-2, 63-64, 91-92

**This list is subject to change.*

In addition, certain other courses, e.g., military science courses, do not satisfy distributional requirements since they are not included within the curriculums of departments normally recognized as falling within any of the three divisions.

Proficiency in English Composition

Each student is required to demonstrate his ability to write good English by presenting either a score of 700 or higher on the CEEB English Composition Achievement Test, or by passing a semester-course (English 1) in English composition in the first semester of the freshman year. A student presenting a 700 or higher score on the CEEB Test satisfies the English composition proficiency requirement for graduation, but does not receive course credit for English 1.

Proficiency in Foreign Language

A student must demonstrate proficiency in one foreign language equivalent to that achieved by the successful completion of the second year of that language at Duke. This requirement may be met by (1) presenting a satisfactory score on the CEEB Achievement Test in a foreign language (See the table on pages 30-31); (2) presenting an acceptable score on the CEEB Advanced Placement Program Examination in French, German, Latin, or Spanish; (3) achieving a satisfactory score on the Duke University placement test in a foreign language (See pages 31-32 for additional information); or (4) completing with a passing grade at Duke, French 64, German 64, Greek 64, Italian 64, Latin 64, Spanish 64,

or Russian 64. Course credit toward graduation is given only for successfully completing language courses or for certain Advanced Placement Program work in language undertaken in high school; course credit is not given when the language proficiency requirement is satisfied by means of CEEB Achievement or Duke placement tests.

Candidates for the A.B. degree may satisfy the language requirement by showing a proficiency in any of the languages noted above, although some departments do recommend a particular foreign language for their majors. However, candidates for the B.S. degree may be required by their major departments to be proficient in a particular foreign language. In this case, a student may be able to satisfy the foreign language requirement for graduation by the successful completion of his department's language requirement. To determine whether a department has special language recommendations or requirements for its majors, see the description of major requirements in the mimeographed compilation of courses.

Learning Experiences

Another significant feature of Program I is the provision of small-group and independent learning experiences which a student is required to have as a part of his academic work.

Small-group Learning Experiences. To supplement the normal classroom and large lecture method of instruction, four types of small-group learning experiences are offered:

Seminar. A course, normally of twelve to fifteen students, in which, instead of hearing lectures, the student engages in discussion, develops skills, refines judgment, and has his ideas challenged.

Preceptorial. A preceptorial is a discussion between an instructor and no more than twelve students. It is an additional and optional unit attached to a regular course. It allows a student to carry his interest and learning in a particular subject further than that required in the regular class. If a regular class normally meets three times a week, the preceptorial would be a fourth one-hour meeting.

Discussion section. A discussion section is comprised of approximately ten students and an instructor in a group that is part of a regular course. It is distinguished from a preceptorial in that *every* student in the course participates in a discussion group, whereas the preceptorial is optional. It is an opportunity for intensive additional study, whereas a discussion group is an integral part of a lecture course given to large groups.

Tutorial. A tutorial is a meeting between one instructor and one to three students, independent of any other course.

Courses or sections of courses offering the above small-group experiences are designated *S* (for seminar), *P* (for preceptorial), *D* (for discussion section), or *T* (for tutorial).

Independent Study, Including Independent Projects and Theses. One aspect of the philosophy underlying Program I is that a Duke student should be given latitude to choose, within broadly stated requirements and with good faculty advising, the academic courses that best suit his intellectual interests and educational goals. A related idea is that he should also be encouraged to assume—again, with faculty guidance and assistance—increasing responsibility for his own education as he proceeds toward graduation. Accordingly, Program I makes provision for independent study, particularly in the junior and senior years. Such study should enable a student to apply his knowledge and skills in a variety of ways toward the accomplishment of immediate academic goals, and also to cultivate a desire and capacity for continued self-education following graduation.

Independent study may take a variety of forms, depending upon the subject matter and research methods of the several disciplines, as well as upon the interests of students and the professors who supervise their independent work. In some instances, it may consist of extensive reading and research in the literature of a discipline, followed by the writing of a substantial paper. In other cases, a student may prepare a laboratory research project, work in field research, or he may write or produce a play or compose a novel.

A special form of independent study, particularly for departmental majors, is the preparation of a thesis or the completion of a major independent project in the junior, but especially in the senior year. Again, the precise nature of the thesis or independent project will vary with the subject matter and research methods of the discipline in which it is undertaken. When undertaken in the senior year, independent study might serve any one of a number of valid educational purposes. For some students it would provide an opportunity for integrating their understanding of the disciplines in which they have majored. For others it would permit more intensive consideration of specific topics previously encountered but insufficiently explored. And for still others, it would be the occasion for truly original research and the development of new insights and knowledge within the disciplines. In any case, the senior thesis or independent project would represent a substantial endeavor in independent scholarship and research, and when used to its fullest potential, it could be the most rewarding educational experience in a student's undergraduate career.

Learning Experience Requirements. Students entering The Woman's College and Trinity College in 1969 are required to have the following small-group and independent learning experiences, which were defined previously:

1. *Freshman and sophomore years*
   a. A seminar in one semester of the freshman or sophomore year, or

b. Two preceptorials, discussion sections, or tutorials, or a combination of any two of these, to be taken at some time during the freshman and/or sophomore years.

2. *Junior and senior years*
   a. A combination of seminars or independent study, with credit equal to at least two semester-courses, or
   b. A thesis or an independent project at some time during the student's junior or senior year for which he would receive credit for two semester-courses.

The above requirements are the minimum for both the A.B. and B.S. degrees. Although a student is not prohibited from enrolling in additional small-group sections or courses or in independent study beyond the required minimum, preference will be given to those needing such learning experiences to satisfy the above requirements.

Concentration

Although students in Program I are expected to achieve breadth of intellectual experience by taking courses in each of the three divisions of learning within the University, they are also expected to acquire some mastery of a particular discipline or interdisciplinary area. Each student must, therefore, concentrate a portion of his studies in a single department or in an approved interdisciplinary program. The former type of concentration is called the "departmental major"; the latter, "interdepartmental concentration." In either case, the student must complete a sufficient number of courses to provide an understanding of the fundamental knowledge and methodology within the discipline or disciplines concerned.

Departmental Major. A student in Program I is likely to pursue a departmental major. In doing so he must pass a number of courses within the major department as specified by that department and approved by the faculty, as well as courses in other departments as may be necessary or helpful to effective performance in the major. The requirements of both types of courses are set forth in the mimeographed "Departmental Courses and Major Requirements" following each department's course descriptions. A student should know those requirements when making a choice as to his major and also when planning his program of study for the future.

Interdepartmental Concentration. Some students in Program I may desire to pursue a plan of studies in two or more departments, rather than major in only one. The faculty, in planning and adopting the new curriculum, concluded that certain interdepartmental programs would be educationally sound and appropriate for some students. Accordingly, it approved the concept of an interdepartmental concentration as an alternate means of satisfying the concentration requirement of Program I, and

requested that proposals for interdisciplinary programs be submitted by interested departments. One such program, namely, the Undergraduate Program in Medieval and Renaissance Studies, has been approved by the faculty and will be open to students entering the colleges in 1969. Another—the African and Afro-American Studies Program—is now in the planning stage. Other programs in interdepartmental concentration are also being planned and should be established by the academic year 1970-71.

A student concentrating in an interdepartmental program must pass a specified number of courses within each of the departments concerned, and may also be required to complete courses in other departments or show proficiency in other areas relevant to the objectives of the program. (See the description of the Undergraduate Program in Medieval and Renaissance Studies on page 73 of this *Guide* for an explanation of course requirements in that program.)

Selecting and Declaring a Major or Interdepartmental Concentration. The selection of a departmental major or program of interdepartmental concentration is an important decision which each student must make sometime during the freshman and sophomore years. Not only is this choice significant for the student's immediate educational experience in college, but it is also essential in making later decisions regarding postgraduate study and career opportunities. A student should, therefore, carefully select his major or program of interdepartmental concentration.

Some students enter college with firm convictions about their academic interests and the departments in which they will major or concentrate. Most are less certain in this regard, however, and find it preferable to determine their interests, as well as their capabilities, by taking a variety of courses in the first two or three semesters. Such an approach is not unreasonable if certain factors are kept in mind—that majoring in a department involves more than simply completing a given number of courses in that discipline. Prerequisites, proficiency requirements, and sequence of courses must also be considered. As a result, a student who is uncertain about his major when entering Duke should understand the need for a timely decision in this regard, so that he may thereafter have sufficient time and flexibility in his scheduling to complete his requirements. In addition, he should know the requirements of those departments that best represent his general academic interests and possible major, and should take a course or two in those departments to test his interests and capabilities more specifically.

At Duke the formal designation of a major or interdepartmental concentration is referred to as "declaring a major." A student may first declare his major in the spring semester of the freshman year, but he must make his declaration by the spring semester of the sophomore year. To do so, he completes a Declaration of Major form which he obtains from, and returns to, his academic dean. Upon receipt of the form, the

student's name is sent to his major department, and he is assigned a faculty adviser in that department. Prior to the formal declaration, a student is advised in academic matters by his general faculty adviser and his academic dean. He is free, however, to consult with the director of undergraduate studies and the supervisor of freshman instruction in any of the departments about his academic interests and his plans for majoring in that department. See pages 27-28 for the academic advising program for non-majors.

Concentration Requirements

Major. A major consists of at least five courses in one department above the introductory level. A department may not require a student for the A.B. degree to take more than eight courses above the introductory level in the major, though the student may elect to do so. A department may not require a student for the B.S. degree to take more than ten courses above the introductory level in the major, though the student may elect to do so. Foreign language departments may at their discretion begin their major after the elementary and intermediate courses. Otherwise, introductory courses are considered to occupy one-fourth of a student's time for the first year of study in a department. More intensive major programs may be offered for the student's election.

Interdepartmental Concentration. Interdepartmental concentration consists of at least three courses beyond the introductory level in each of two or more departments, and requires the approval of the directors of undergraduate studies in the departments concerned.

Advanced Work Requirement

As previously noted, a student in Program I must complete at least thirty-two semester-courses in an approved curriculum to graduate with an A.B. or B.S. degree. Of that number of courses, at least twelve must be at the advanced level. Normally, advanced-level courses are numbered in the 100- and 200-series, although there is some variation among the various departments. This requirement may be satisfied by passing advanced-level courses in any of the three divisions of learning earlier described. In satisfying the distributional requirement for the second division, a student will complete at least two advanced courses; he also will normally complete a number of such courses by meeting his major or interdepartmental concentration requirements. The remainder of the twelve may be taken as courses in the major, as distributional requirements, or as electives.

Physical Activity Requirement

All students are required to complete two years of approved physical activity unless excused for medical reasons. This requirement is normally

met by satisfactory completion of two years in appropriate physical education activity courses offered by the Departments of Health and Physical Education. In special cases, an alternate form of physical activity may be approved by those departments as satisfying the requirement. Each student must begin to fulfill the requirement in his freshman year and ordinarily will be expected to complete the full requirement by the end of the sophomore year. Letter grades are assigned for performance in *required* physical education courses and alternate forms of physical activity; such grades are not considered, however, in calculating grade averages for purposes of graduation, continuation in college, or honors. Nor do physical education courses or alternate forms of physical activity count among the thirty-two courses needed for graduation. Nevertheless, each student must complete this requirement to be graduated.

Grading and Grade Requirements

Types of Grades. A student's performance in academic work is indicated by use of the following letter-grades: *A*, exceptional; *B*, superior; *C*, average; *D*, low pass; and *F*, failure. A passing grade (*A*, *B*, *C*, or *D*) may be modified by a plus (+) or a minus (—). All grades earned by a student, including *F*'s, are entered in his permanent record. For additional information about the grading system, see the 1969 *Bulletin of Information and Regulations* available in the fall.

Grades Requirement for Graduation. The faculty of the University has established the following grades requirement for graduation:

> Of the thirty-two semester-courses required for graduation, twenty-two, or their equivalent in terms of double-courses and half-courses, must be passed with grades of *C*— or better.

For purposes of this requirement, the average of grades received in two half-courses will be the equivalent of a grade in a semester-course, and the grade in a double-course will count as two semester-course grades of the same quality. Additional graduation requirements with respect to grades may be adopted by the faculty; the 1969 edition of the *Bulletin of Information and Regulations* should be consulted for further information.

Continuation Requirements

A student must achieve a satisfactory record of academic performance each semester in order to continue in his college. The following regulation specifies the conditions under which he may be withdrawn for reasons of academic failure:

> A student who fails three or more courses in the first semester of the freshman year or who fails two or more courses in any subsequent

semester must leave his college for at least two semesters. The double summer session may be counted as a semester. The student's return must be approved by the dean of his college. If the student thereafter fails two or more courses in a semester he will be permanently dismissed from the college. In addition, a student may be dismissed temporarily or permanently by the dean of his college for failing to make satisfactory progress toward graduation. Any student excluded from his college under the provisions of this proposal may at his request have his case reviewed by a committee on academic standards of the Undergraduate Faculty Council.

This regulation specifies that a student may be dismissed from his college not only by reason of an excessive number of failing grades in any one semester, but also for a more general failure "to make satisfactory progress toward graduation." This provision refers to the situation in which a student's cumulative academic record for two or more semesters is of such poor quality in terms of grades as to create serious doubt about his ability to satisfy the over-all grades requirement for graduation. For instance, at least twenty-two of the thirty-two courses required for graduation must be passed with grades of *C*— or better; therefore, no more than ten *D*'s may be counted toward graduation. If a student receives a *D* in eight courses his first year, he has created doubt about his ability to satisfy this requirement, and may be dismissed from his college for failure "to make satisfactory progress toward graduation." Specific guidelines concerning this will be published in the *Bulletin of Information and Regulations.*

Residence Requirements

The Normal and Maximum Periods of Residence. Four academic years, or eight semesters, in residence is the normal amount of time a student may take to earn either the A.B. or B.S. degree. This period may be extended by one or two semesters when, in the opinion of a student's academic dean, legitimate reasons underlie the student's failure to be graduated in eight semesters, and ample reasons exist for expecting that such extension will enable the student to complete all remaining requirements for graduation. Under no circumstances will a student be permitted more than five academic years, or ten semesters, in residence to be graduated, unless he has been enrolled previously as a special student.

The Minimum Period of Residence. At least sixteen courses, including the courses of the final two semesters must be completed satisfactorily at Duke. A student who meets this requirement, but who lacks one course in final fulfillment of degree requirements may take this work in another institution of approved standing, provided the course is approved by his major adviser and appropriate academic dean.

Class Attendance Requirements

The following statement regarding class attendance is based upon information in the current issue of the *Bulletin of Undergraduate Instruction.* Its provisions are equally applicable to students entering the University in 1969.

The attendance regulations specifically place the responsibility for class attendance upon the individual student. He is expected to attend classes regularly and punctually. A student should recognize that one of the most vital aspects of a residential college experience is attendance in the classroom and that the value of his academic experience cannot be fully measured by testing procedures alone.

The members of the student body are considered sufficiently mature to appreciate the necessity of regular attendance, to accept this personal responsibility, and to demonstrate the kind of self-discipline essential for such performance and, conversely, to recognize and accept the consequences of failure to attend. An instructor is privileged to refer to the dean of the appropriate college for suitable action those students who in his opinion are causing their work or that of the class to suffer because of absences or excessive tardiness.

Absences from tests and required classes due to illness will be excused when certified by a proper medical official. Absences due to authorized representation of the University may be excused. Officials in charge of groups representing the University are required to submit names of those persons to be excused to the appropriate dean's office forty-eight hours in advance of the hour when their absences are to commence.

Provisions Regarding Military Science Courses

No more than four courses in the military sciences may be counted among the thirty-two courses required for graduation. For students participating in either the Air Force or Naval ROTC program, the four courses for which graduation credit may be earned are normally taken in the junior and senior years. Enrollment in a few additional courses and laboratories is required in earlier years in order to fulfill requirements for an officer's commission. Although not counted toward graduation, such additional courses, if completed successfully, appear on a student's permanent academic record.

Program II

Nature and Purpose

The second approach to an A.B. or B.S. degree is called Program II. In general, this program offers the student who has a special interest and talent in a single field or an unusual combination of interests and talents

in several fields, an opportunity to plan, with the counsel of a single department or an interdepartmental committee, a special curriculum or plan of academic and related work adapted to the exceptional qualities which the student possesses. Once accepted into Program II, the student and his adviser design the special curriculum for the whole or remainder of the student's college career. Together they assess his background, needs, and ambitions and evaluate the resources of the University and those outside it as a means of satisfying those ambitions. They consider what academic courses would be useful, as well as other options. Thus, a full semester or year of independent study equivalent to a normal course load under Program I might be agreed upon; or a year long work-study program off-campus, or a period of residence and study abroad, might seem most pertinent. Regardless of the features of a particular curriculum under Program II, each must be tailored to the special interests and talents of the student for whom it is designed.

Once the special plan of academic and related work has been approved by the appropriate department or interdepartmental committee, it is presented to the supervisory Committee on Program II of the Undergraduate Faculty Council for approval. Upon endorsement by that committee, it becomes an obligation assumed by the student, although it may be modified later with the approval of the department or interdepartmental committee and the Program II Committee. Technically, a check-sheet is prepared describing the curriculum or plan of work and is sent to the student's academic dean. Also, yearly check-sheets showing the student's progress in achieving the curriculum or plan are submitted to the dean.

Method of Gaining Admission

A freshman interested in being considered for Program II should confer first with his academic dean about his eligibility for the Program. If he appears eligible, he will be referred to the director of undergraduate studies in the department closest to his interests, or in special cases, to the chairman of an interdepartmental program. Together, the director (or chairman) will decide whether Program II is appropriate for the student, that is, whether the department will accept him as a Program II student. If he is accepted by the department and his special curriculum is approved by the Program II Committee of the faculty, he is formally designated a Program II student.

Normally, a student will be accepted into Program II only after he has been in residence at Duke for one or two semesters and has shown during that period that he possesses the necessary qualifications for admission. Nevertheless, a freshman who believes that he qualifies for Program II and desires to be admitted in his first semester at Duke is invited to write the dean of freshmen of his college during the summer months and

provide him with a complete statement of his qualifications and plans as a prospective Program II student.

Because of the special qualifications for admission to Program II, as well as the great freedom permitted a student in selecting courses in Program I, it is anticipated that only a few students will enter Program II each year. Until accepted into Program II, a student should register for courses and satisfy curricular requirements as a Program I student. Upon acceptance into Program II, a student is relieved of most, but not all, requirements expected of Program I students. Should he leave Program II for any reason, he assumes all requirements of Program I.

General Requirements for Program II Students

Apart from the requirements arising from his approved curriculum or plan of academic and related work, a Program II student must satisfy certain general requirements which are also applicable to students in Program I. These requirements, described in the foregoing pages on Program I, are as follows: "Semester-Courses: Normal Course-Load and Graduation Requirement" (p. 14); "Physical Activity Requirement" (p. 22); "Grading and Grades Requirements" (p. 23); "Continuation Requirements" (p. 23); "Residence Requirements" (p. 24); "Class Attendance Requirements" (p. 25); and "Provisions Regarding Military Science Courses" (p. 25).

Academic Advising of Freshmen

Advice concerning course selections each semester and more general academic matters is available to freshmen from a number of sources on campus. Faculty members serve as advisers to groups of students in each of the dormitories and are available for individual conferences during the semester and before each preregistration period. In the academic departments, the supervisor of freshman instruction and/or the director of undergraduate studies may be contacted for information concerning matters related to their departments. And in each of the colleges, the dean of freshmen has special responsibility for advising freshmen about academic concerns. Freshmen are encouraged to seek the assistance which these faculty and administrative officers are prepared to render.

A source of specialized counseling regarding problems in academic and career-goal proficiencies is the University Counseling Center. Staffed by professional counselors, the Center offers testing and guidance assistance in the academic area to students at little or no cost, and is also available for counseling about certain personality problems.

In addition to the above sources, assistance in academic matters is also provided through the student Freshman Advisory Council programs in

both colleges and through residence counselors in each of the dormitories.

During Freshman Week, each freshman will be expected to confer with his faculty adviser before final registration for courses. He will also have the opportunity to meet with faculty representatives of the several departments, as well as with the dean of freshmen in his college, regarding appropriate course selections. Course choices made in the summer preregistration procedures are not final; they may be altered in Freshman Week on the basis of such counseling.

Advanced Courses Placement and Credit

Under certain circumstances, freshmen in the four undergraduate schools and colleges of the University may (1) qualify for placement in advanced courses in some of the academic departments, (2) receive course credit for college-level academic work completed in secondary school, and (3) be excused from the required course in English composition (English 1) and thereby satisfy the English composition proficiency requirement for graduation. The following information explains the circumstances under which each of the above matters pertains.

Placement in Advanced Courses

Advanced courses to which freshmen may be admitted are those above the introductory level. The numbering of such courses, however, varies among the several departments. A freshman in The Woman's College or Trinity College should not assume that the advanced courses to which he may be admitted by the procedures noted below necessarily qualify as "advanced courses" of the type required for graduation. See the section on Advanced Work Requirement on page 22.

Demonstrated proficiency on certain tests and record in previous educational experience are the criteria employed to determine a freshman's qualifications for advanced courses, with acceptable test scores being the

basic or controlling criterion. Scores on the following tests are used in granting placement in such courses.

CEEB Advanced Placement Program (APP) Examinations

Scores of 3, 4, or 5 on CEEB Advanced Placement Program Examinations are bases for placement in advanced courses in botany, chemistry, English, French, German, history, Latin, mathematics, physics, Spanish, and zoology. A student presenting such a score and desiring to continue in the same subject matter at Duke may request an advanced course for the fall semester. In selecting a course, see the mimeographed "Departmental Courses and Major Requirements," as well as pages 48-100 of this *Guide* where some departments have listed advanced courses open to freshmen. Students requesting advanced courses in the summer preregistration procedures will be notified of their placement in the late summer by mail or in Freshman Week.

In the case of French, German, Latin, and Spanish, APP scores of 3, 4, or 5 may result in placement in courses at the 100-level; a conference in Freshman Week with the director of undergraduate studies or supervisor of freshman instruction in the appropriate department is required before final placement is made. If students in The Woman's College and Trinity College presenting such scores do qualify for such advanced placement, they will also have satisfied the foreign language proficiency requirement for graduation, and will not need to take foreign language at Duke unless they so desire. Advanced courses at the 100-level or above, however, satisfy distributional requirements in the humanities.

CEEB Achievement Tests

Scores on CEEB Achievement Tests are the basic criteria for placement in foreign languages (except Russian) and in mathematics. In the case of Russian, CEEB test scores have not yet been sufficiently validated to serve as the basic criteria for placement, and must be supplemented by scores on the Duke placement test in Russian. Students who wish to continue in Russian at Duke or satisfy the foreign language proficiency requirement for graduation, therefore, should take the Duke test, whether or not they have taken the CEEB Achievement Test. The following tables will assist students in making reasonable course selections in the subjects indicated.

FRENCH		*GERMAN*		*SPANISH*	
CEEB Achievement Scores	*Course Placement*	*CEEB Achievement Scores*	*Course Placement*	*CEEB Achievement Scores*	*Course Placement*
200-396	French 1*	200-365	German 1*	200-453	Spanish 1*
397-556	French 63	366-571	German 63	454-623	Spanish 63
557 plus	French 91	572 plus	Third year	624 plus	Spanish 91

LATIN	
CEEB Achievement Scores	*Course Placement*
200-529	Latin 1*
530-639	Latin 63
640 plus	Latin 91

MATHEMATICS	
CEEB Achievement Scores	*Course Placement*
430 or below	Mathematics 31A
431-529	Mathematics 31
530-739	Math 31 (special sections)
740 plus	or higher depending on previous training

*The first year of a language, including Russian, may not be taken for credit by a student who has completed more than two years of that language in secondary school. Some exceptions may be granted in the case of German, with permission of the director of undergraduate studies in that department.

Students in The Woman's College and Trinity College who, on the basis of CEEB Achievement Test scores, qualify for French, German, Latin, or Spanish 91, or higher, will have satisfied the foreign language proficiency requirement for graduation; however, they will not receive credit for courses thus by-passed. The same applies to those who, on the basis of a CEEB Achievement Test score in Russian as validated by an appropriate score on the Duke placement test, qualify for Russian 91 or higher. Students qualifying for courses in mathematics above Mathematics 31 will not be granted credit for courses by-passed unless they also present appropriate scores on APP tests.

Duke University Placement Tests

Placement tests in foreign languages and mathematics are administered by Duke University during Freshman Week. The foreign language tests are also offered at the end of each semester for students desiring to demonstrate proficiency at the level required for graduation; students desiring to take the tests, including those students enrolled in language courses below the 64 level, may do so upon application to the appropriate department and payment of a small fee to cover costs of the testing arrangements.

Mathematics Placement Test. This test establishes whether a student is qualified to take the beginning course in mathematics, namely Mathematics 31. Freshmen who believe that they are eligible for placement beyond Mathematics 31 are invited to see the supervisor of freshman instruction in that department early in Freshman Week. Placement beyond Mathematics 31 does not provide credit for that course.

Students who expect to enter economics, business administration or accounting, engineering, premedical or predental programs, mathematics, or science are advised to review their secondary school mathematics, particularly algebra (e.g., factoring, fractions, linear equations in one, two, and three unknowns, functions and graphs, exponents and radicals,

and elements of quadratic equations) and trigonometry in order to qualify for Mathematics 31.

Foreign Language Placement Tests. Placement tests are offered in French, German, Latin, Russian, and Spanish. Generally they are of the CEEB type with two distinct parts: a section on reading comprehension and a test of basic grammar. Students may prepare for the first part by extensive practice in rapid reading, with emphasis on general comprehension rather than translation. Preparation for the second part should include a review of basic grammar with particular attention to verb forms.

In the case of students in The Woman's College and Trinity College, the placement test in Russian should be taken in Freshman Week by those students who wish to continue their study of the language at Duke or who wish to satisfy the proficiency requirement for graduation, even though they have previously taken the CEEB Achievement Test. The placement tests in French, German, Latin, and Spanish should be taken in Freshman Week by (1) those who desire to continue in the language but have not taken the CEEB Achievement Test, and (2) those who, having taken the CEEB Test, wish to challenge the score obtained on that test either for the purpose of qualifying for a higher-level language course or in order to satisfy the proficiency requirement for graduation, or both.

Students in The Woman's College and Trinity College who qualify on Duke placement tests for a foreign language at the 91 level or higher will have satisfied the foreign language proficiency requirement for graduation; however, they will not receive credit for courses thus by-passed. Such students may wish to discuss with the appropriate director of undergraduate studies the possibility of enrollment in a course at the 100-level. Literature courses on the 100-level satisfy distributional requirements in the humanities division.

Science majors pursuing a B.S. degree are required to select a foreign language acceptable to the departments in which they major. For students pursuing an A.B. degree, major departments may recommend particular foreign languages. For information in this regard, see the mimeographed compilation distributed with this *Guide*.

Premedical and predental students must satisfy the foreign language requirements of the degree programs they intend to pursue, whether B.S. or A.B.

Course Credit for Advanced Placement Program Work

A student who has earned a score of 3, 4, or 5 on a CEEB Advanced Placement Program Examination in one of the following subjects and is approved for placement in a course above the freshman level, may be considered for course credit in the appropriate subject: botany, chemistry,

English, French, German, history, Latin, mathematics, physics, Spanish, and zoology. For those students presenting scores of 4 or 5, the award of credit in most cases will be granted automatically upon matriculation; for those presenting scores of 3 it will be determined with the approval of the academic department concerned no earlier than at the end of the first semester following completion by the student of an advanced course in that department with a grade of *C* or better; the advanced course must be taken by the end of the freshman year. Course credit may be granted for one or two semesters in each subject area in which examination is offered in the Advanced Placement Program.

Course credit is not given at Duke for courses taken at other colleges before the date of secondary school graduation.

Excuse From Required Course in English Composition

Students who present a score of 700 or higher on the CEEB English Composition Achievement Test are excused from the required course in English composition, English 1. They thereby satisfy the English composition proficiency requirement for graduation, but do not receive credit for English 1.

Summer Preregistration Procedure

As noted previously, the primary objective of the *Academic Guide* is to assist freshmen entering Duke in September, 1969, to make reasonable course selections for the fall semester. Final selections will be made on registration day during Freshman Week in September. Preliminary selections, however, are made by mail during the month of June, preferably by June 15. This preregistration procedure serves at least three important objectives: it causes a student to think through his academic program for the freshman year and the years beyond; it informs the various academic departments within the University about the nature and extent of course choices and thereby enables them to make reasonable adjustments in course offerings; and it increases the opportunities for freshmen to be enrolled in courses they desire to take. Each freshman is therefore asked to give careful and prompt attention both to his decisions regarding course choices for the fall semester and to the completion and return of the preregistration cards enclosed in the envelope inside the back cover of this *Guide*. The cards must be returned by July 1 in order that a freshman may be preregistered for the fall term. Those desiring to increase their chances of enrollment in courses of their first choice should return the cards before July 1, preferably by June 15. Before completing the preregistration cards, read carefully the Instruction Card included in the packet. Return all cards to the dean of your school or college; use the return envelope provided for that purpose.

Special Note. Duke University is conducting an experiment of having a limited number of students who are in the same discussion sections of Chemistry 1, English 1, or History 1 live in the same dormitory. The experience of other universities suggests that students who are so grouped discuss the substance of the course with each other, do better in it, and have a more enjoyable time. If you request a course in Chemistry 1, English 1, or History 1 and wish to participate in such an experiment, please so indicate on the reverse side of the Trial Course Program Card.

A Guide to Course Selections for Fall Semester, 1969

Trinity College and The Woman's College

This chapter is intended to be a step-by-step guide to assist freshmen entering Trinity College and The Woman's College in the fall in their summer preregistration.

As previously mentioned, most freshmen entering The Woman's College and Trinity College in 1969 will pursue the A.B. or B.S. degree in Program I rather than in Program II. Moreover, until a student is formally accepted by a department as a Program II student and his plan of study is approved by the Program II Committee of the faculty, he is considered a student in Program I.

Program I students must satisfy the various requirements for graduation explained in the discussion of Program I above. The very flexibility of most of the requirements, however, may pose problems of choice and uncertainty for a student, especially if he is unsure about his academic interests and career goals. What courses should I take in my first semester? Must I take English composition? How about a foreign language? And a natural science? How many courses should or must I take? What happens if I have an Advanced Placement Score of 3, 4, or 5 in a particular subject? Since I know that I'm going to be a doctor, what courses should I take in the fall semester? These and many other

questions confront most freshmen. Not all of them can be answered here. But the purpose of this chapter is to provide some help in answering them, so that each freshman entering The Woman's College or Trinity College may make a preliminary selection of courses for the fall semester and preregister by mail for those courses before July 1. Therefore, there will be some repetition between the following information and that presented earlier in the discussion of Program I.

Many questions will have to await a student's arrival on campus during Freshman Week and the opportunity to confer with his faculty adviser and academic dean. Nevertheless, each student is urged to give close attention to his course selections as a basis for preregistration in the early summer. In doing so he will not only increase his chances for enrollment in the courses he desires in the fall, but also increase his awareness of questions he will want to have answered by his adviser or dean during Freshman Week.

In addition to the information presented in this section consult the chapter on pages 48-100 of this *Guide* for descriptions of courses normally open to freshmen. The student should also consult the mimeographed compilation for descriptions of courses not listed in the *Academic Guide.*

Number Of Courses To Be Selected

The normal course load is four semester-courses each semester, or their equivalent in terms of half-courses and double-courses. There are very few half-courses and no double-courses available to freshmen in 1969; however, if a single half-course is chosen, it must be taken in addition to four semester-courses, making a total course load of four and one-half courses. In the description of courses primarily open to freshmen in this *Guide,* the term *one course* refers to a semester-course. When the term *two courses* follows a course description, the reference is to two semester-courses offered in sequence in the fall and spring semesters.

For summer preregistration purposes, freshmen are selecting courses only for the fall semester.

English Composition

Unless a student presents a score of 700 or higher on the CEEB English Composition Achievement Test, he must take English 1 in the fall semester of his freshman year. English 1 is a semester-course in English composition, and serves as one of the four courses constituting a normal load for the fall semester.

Students who have received a grade of 700 or above in the CEEB English Composition Achievement Test are excused from English 1. They will also have fulfilled the English composition requirement for graduation, but will not receive course credit for it. They may enroll in

English 55 or 57 in the fall semester. If they wish to postpone enrollment in English courses until the spring semester, they may then take English 56 or 58 or one of the Freshman literature courses numbered 21 through 26, or both.

Students who present a score of 3, 4, or 5 in the CEEB Advanced Placement Program Test in English are not excused from English 1 unless they also present a grade of 700 or above in the CEEB English Composition Achievement Test. Those with scores of 4 or 5 will, however, receive automatic credit for English 20 and will have fulfilled one of the distributional course requirements in the humanities; those with a score of 3 will receive credit for English 20 only upon completion, with a grade of *C* or higher, of a literature course in the English Department. Upon such completion, they will have satisfied two distributional requirements in humanities. Students with APP scores of 3, 4, or 5 in English may also enroll in English 55 or 57 in the fall semester, or in English 56 or 58 or one of the courses in the 21-26 series, or both, in the spring semester.

Foreign Language

In order to begin fulfilling the foreign language requirement of Program I, a student may wish to take a course in a foreign language in the fall semester. In fact, whether he desires to continue the study of a language commenced in high school or to start another language at Duke, it is probably advisable that he enroll in a foreign language course in his first semester. If he wishes to commence a language he has not previously studied, he should select a course numbered 1 (French 1, Latin 1, etc.). If, on the other hand, he desires to continue in a foreign language taken in high school, he must take a proficiency test in order to determine the appropriate course placement. In most instances, a CEEB Achievement Test taken before arrival at Duke satisfies this requirement, and a student will be placed in a course appropriate to the proficiency revealed by his score on that test, provided, of course, he elects to continue in that foreign language.

For example, a student who receives a score of 498 on the CEEB Achievement Test in French qualifies for, and should select, French 63 for the fall semester, 1969. He may not enroll in French 1. If he prefers not to take French 63, he must select another foreign language. The same rule applies to Latin and Spanish and ordinarily to German. Moreover, a student who has had more than two years in French, German, Latin, Russian, or Spanish in secondary school is not permitted to enroll in courses numbered 1, 2, even though his score on the CEEB or Duke placement test does not qualify him to take a higher-numbered course. In special cases, an exception to this rule may be granted in the case of German, in order to permit students to enroll in German 2 in the fall semester. Such exceptions are given by the director of undergraduate studies in German. A student whose CEEB score does not permit him to

take a foreign language course above the 1, 2 level may wish to review the language during the summer months in order to make a better score on the Duke placement test in Freshman Week.

In the case of Russian, CEEB test scores must be validated by results on the Duke placement test in Russian. All students desiring to continue in Russian (or to show proficiency at the 91 level in order to satisfy foreign language proficiency requirements for graduation) should take the Duke placement test in Russian in Freshman Week. For information regarding placement in advanced language courses, consult the chart on pages 30-31 of this *Guide*.

For those students who have not taken a CEEB test in a foreign language or who, having taken such test, wish to challenge or validate the reported score, proficiency or placement tests in foreign languages are given at Duke during Freshman Week in September and at the end of each semester. Scores on these tests are used for placement purposes and for satisfying proficiency requirements for graduation.

In selecting a foreign language course for summer preregistration, a student who desires to continue in a language previously studied but has not taken the CEEB test in that language should indicate on the course program card the probable course-level for which he will qualify (e.g., French 1 or German 63), plus the fact that he will take the Duke placement test in Freshman Week.

One final point is in order: each student should remember that the foreign language requirement under Program I is a *proficiency* requirement. The required proficiency is that ordinarily gained by completing the second year (63-64) of a foreign language at Duke. Such proficiency, however, may be demonstrated by an appropriate score on a CEEB test or on a Duke placement test given during Freshman Week and at the end of each semester. It is to a student's advantage, therefore, that he do as well as possible on such tests. If he scores at a level required for admission to a third-year course (91 or higher), he will have satisfied the foreign language requirement at Duke. If he scores at the 63 level, he will complete the language requirement by taking only one year of the language. In either case, he saves time in language proficiency coursework and gains added opportunity to take advanced literature courses in the language or to enroll in other type courses. He will not, however, receive course credit for the language courses he has by-passed.

Courses To Satisfy Distributional Requirements

Since the distributional requirements do not specify particular courses that must be taken, but rather give great freedom of choice within broad categories of subject matter, it is important that a student first acquire an understanding of the broad requirements in order that he may make appropriate and desirable course selections each year. Before selecting courses for the fall semester, therefore, each student should read again

the earlier section in the *Guide* concerning distributional requirements. Satisfying these requirements in terms of the number of courses to be taken in each of the three divisions should pose no real problem for any student. This is true for several reasons. In the first place, apart from so-called skill courses, all academic subjects within the three divisions of learning may be applied to satisfy distributional requirements. Simply by taking courses in a variety of subject matter, a student is likely to complete a part of these requirements. Second, by meeting the course requirements of his major or program of interdepartmental concentration, he automatically satisfies the requirements of the first division. Third, some departments require that their majors take courses in other divisions as prerequisites to majoring in these departments. As a result, a portion of the distributional requirements of the second or third division may be automatically satisfied.

Despite the relative ease with which some or most of the distributional requirements can be met, it is still necessary and wise that a student exercise care in the selection of courses. This is especially true if he is to avoid the error of satisfying the requirements simply in terms of the number of courses specified for each division, rather than in terms of their relevance to his intellectual interests and academic objectives. Even in the third division, for which a student may have the least interest—and talent—there is a variety of courses from which he may choose.

Since the distributional requirements apply to a student's total undergraduate program and since the number of courses needed to satisfy the requirements are not excessive, there is no need for a first-semester student to feel under pressure to choose a course simply to meet distributional requirements. Some of the courses taken in the first semester probably will apply toward the requirement in any event; but they should be chosen because of their relevance to a student's intellectual interests and academic goals, and not because of an apparent need to satisfy these requirements. Later, in Freshman Week and during the first semester, academic advisers will assist each student in his plans for meeting distributional, and other, requirements.

Courses To Satisfy Requirements in The Major or Interdepartmental Concentration

If, before arriving at Duke, a student has definitely decided upon his major or program of interdepartmental concentration, it may be wise that he commence course work in that area in the freshman year, if for no other purpose than to confirm the decision he has made. Ordinarily, this will mean taking a course in both the fall and spring semesters, although some departments do not offer introductory courses until the spring semester. In addition, a prospective major will want to become familiar with the prerequisites or related courses in other departments required by his major department, to determine whether such courses should be taken

in the freshman year. To illustrate, a student intending to major in chemistry, in addition to taking Chemistry 1 or 1P, will enroll in Mathematics 31 in the fall semester (assuming no advanced placement in mathematics) and will continue in both subjects (Chemistry 2 and Mathematics 32) in the spring semester. Mathematics 31-32 are related courses, not prerequisites, to Chemistry 1-2; yet they are prerequisites to advanced courses in Chemistry and should be taken in the freshman year. This example is intended to alert students to the need of careful attention to the requirements of any major as a guide to course selections in the freshman year. In studying a particular department's requirements, it is advisable that a student also read the descriptions of its courses in order to determine the prerequisites of each course and the preferred sequence, if any, in which courses should be taken. Additional help in this respect will be available to students in Freshman Week advising.

Courses To Satisfy Learning Experience Requirements

Students entering Duke in the fall semester, 1969, are required to complete, sometime during their freshman and sophomore years, a learning experience requirement which has been stated previously (p. 19). It follows from this requirement, therefore, that a student need not take one of these small-group learning experiences in his freshman year, although he is advised to do so if the subject matter of the course offering such a learning experience is consistent with his academic plans and intellectual interests. In fact, the new curriculum has been established, in part, on the premise that the small-group experience is a desirable method of instruction which most freshmen will want to choose. However, a freshman should not select a course simply because it affords a small-group learning opportunity; rather the subject matter should be the governing criterion, even if that results in the postponement of the small-group experience until the sophomore year. In addition, a freshman must understand that the availability of these experiences is dependent upon the availability of faculty to teach them, and, therefore, that it may be necessary that he limit the number in which he will enroll or that he delay until the sophomore year his completion of this particular requirement.

To assist freshmen in their selection of courses to satisfy the learning experience requirement, it might be helpful to reiterate some points made in the previous explanation of the requirement. Courses which are taught as seminars are so designated by the inclusion of the letter *S* following the course number. For example, a special section of History 1 is offered as a seminar and is numbered History 1S. A course which includes a discussion section is designated by the letter *D* following the course number: History 1D. And courses which offer the option of an additional preceptorial meeting each week are designated by the letter *P* following the course number: Biology 11P. In some cases, all or most sections of a course include a particular small-group learning experience. Thus, with

the exception of History 1S, all sections of History 1 are designated History 1D, indicating that a weekly discussion section is a uniform feature of the course for all students. In many cases, however, a choice is afforded between the regular method of instruction and the small-group method. Zoology and Biology may be taken in the fall semester without an additional preceptorial meeting each week, in which case they are designated Zoology 11 and Biology 11, or a student may elect either course with a preceptorial attached, in which case he would choose Zoology 11P or Biology 11P. In the description of courses in the last chapter of this *Guide*, each course providing a small-group learning experience is indicated by the appropriate letter following the course number. Unless a course number carries a small-group letter (*S, D, P* or *T*), that course does not provide a learning experience appropriate for satisfying the small-group learning experience requirement. Students desiring courses affording small-group learning experiences should so indicate by using the appropriate course number and letter following.

A seminar (S) is an independent course, that is, it is not part of another course. Ordinarily, it is a semester-course and counts as one of the four courses for which a student will enroll in the fall semester, whereas a discussion section and a preceptorial are not considered additional course units for purposes of the four-course load requirement, but are parts of courses which satisfy that requirement.

Physical Activity Requirement

Unless excused for medical reasons, each student is required to enroll in a physical education activity course (Physical Education 1) in the fall semester. In special circumstances, an alternate form of physical activity may be approved by the Men's or Women's Physical Education Department. Inquiries regarding the latter may be directed to the chairman of either department in Freshman Week. The required physical education course is not counted among the four semester-courses taken each semester.

Advanced Courses

For information concerning advanced courses, methods of gaining admission to such courses, and Advanced Placement Program credit, see pages 32-33 of this *Guide*.

Special Courses or Sections of Courses

Some departments in the University offer special courses or sections of courses for students with particular interests, talents, or background. Information regarding such courses and sections is provided in the departments' descriptions of courses on pages 48-100 of the *Guide*. Interested

students are directed to the comments contained there regarding the courses listed below. Those desiring such a course or section should so indicate on his summer preregistration course card.

Chemistry 1P, Special Chemistry 1 Laboratory, Latin 99S, English 1X, History 1S, Mathematics 31, Philosophy 43S, Physics 41, Physics 51D, Political Science 11S, Psychology 70S, Religion 70S, French 93S, Spanish 93S, and Sociology 91XS

Elective Courses

With the exception of English 1 and the required course in a physical activity, a student is free to choose courses for the freshman year which he considers most appropriate for his purposes. Although there is the opportunity for choice, the faculty, by specifying certain broad requirements a student must meet if he is to take a Duke degree, obviously has placed a limit upon the amount of freedom he may exercise in the selection of courses and in other respects. However, the decided emphasis in Program I is on freedom for the student, with good faculty advising, to make choices which will advance his intellectual insights and prepare him for educated, enlightened decisions in the future.

A special category—yet another "category"—of courses representing an aspect of such freedom is "elective courses," namely, those which are not meant to serve any of the various requirements of Program I except graduation credit. The number of electives a student may have will be determined, in part, by the major he chooses and the requirements associated with it, as well as by the number of required courses outside the major. The student should feel perfectly free to select a course or courses for the freshman year "simply because he wants to do so," recognizing the need to take stock of graduation requirements in subsequent years.

Suggested Course Programs For Fall Semester

Because of the varying interests, talents, and career plans among members of the freshman class, it is impossible, as well as unwise, to suggest a standard or uniform program of academic courses for which each student should enroll in the fall semester. The foregoing information about course selections indicated certain courses each student must take, unless for some approved reason he is excused from them. Most students will take English 1 and Physical Education 1. Of these, only English 1 qualifies as one of the four academic courses required for a normal course-load. One of the other three might be a foreign language, assuming of course that a student does not "place out" of the language requirement. Such a selection is probably wise. In the first place, it may enable a student to continue with a language he has begun in high school while it is still relatively fresh in his mind. And second, even if he is starting a new

language, it might be well to begin that language as soon as possible in order either simply to complete the requirement by the end of the sophomore year, or, having gained a basic proficiency in the language, to enable him to continue in the junior and senior years with literature courses and seminars.

Perhaps then, two of the four academic courses for the fall semester might be English 1 and a foreign language course. The selection of courses beyond those two, however, will be determined by the student's major academic interests and career goals. The following information may be helpful to those with particular interests and career plans.

Prospective Science Majors. A student committed to, or simply interested in, science will want to take a course in a science of his choice. Ordinarily he will also find it necessary to enroll in mathematics. Assuming no advanced placement in a science, a science major normally will choose one of the following courses for the fall semester: Chemistry 1 or 1P; Biology 11 or 11P or Zoology 11 or 11P; Geology 1 or 1P; and Physics 41 (for physics majors) or 51D (for non-physics science majors, engineers, and premedical students). A science major should not take Physics 1. In addition, he will also enroll in Mathematics 31, again assuming no advanced placement in mathematics. A prospective science major, therefore, might well have the following course program for the fall semester: English 1; Foreign Language 1 or 2 (in case of German) or 63; Science at the introductory level, except Physics 1; Mathematics 31; and Physical Education 1. Ordinarily, it is unwise for a freshman, even a science major, to enroll in two science courses. He should do so only after consultation with the director of undergraduate studies or supervisor of freshman instruction of the science department in which he is likely to major.

Some science majors may have an interest in an interdisciplinary approach to the biological and geological sciences, such as biomathematics, microbiology, molecular biology, oceanography, and psychobiology. Information about such approaches, especially as preparations for graduate study, may be obtained from the directors of undergraduate studies in the Departments of Biology and Geology during Freshman Week. A course open to freshmen with an interest in oceanography is "Introductory Oceanography," which is listed as both Biology 53 and Geology 53.

Prospective Majors in the Humanities. In addition to enrolling in English 1 and a foreign language proficiency course, a student interested in one of the humanistic disciplines might select his third course from that discipline and his fourth from a discipline in one of the two remaining divisions. The following courses in the humanities division are open to freshmen in the fall semester without prerequisites or demonstrated proficiency: Art 51; Classical Studies 53, 57S; Music 51; Philosophy 41, 43S, 48; and Religion 50, 50D, 52, 52D, 55, 55D, 57, 59, 70S. Students

excused from English 1 might take English 55 or 57 instead; those who "place out" of foreign language proficiency courses might substitute a language literature course at the 91 or higher level.

The fourth course might be selected from the following courses in the social science division: Economics 1; History 1D, 1S; Political Science 11, 11S; Psychology 70S (if a semester-course); Sociology 91D, 91S, 91XS; Anthropology 94, 94D. Or it may be selected from the following courses in the division of natural sciences and mathematics: any introductory course in biology, chemistry, geology, or zoology; or Math 31, 51. In some cases—history and mathematics, for example—students may be admitted to an advanced course by virtue of APP scores.

Thus, the course program of a prospective humanities major for the fall semester might be as follows: English 1; Foreign language 1 or 2 (in case of German) or 63; Humanities course; Social science course; or Natural science or mathematics course; and Physical Education 1.

Prospective Majors in the Social Sciences. Using the information in the illustration above, a prospective major in one of the social sciences might have a course program for the fall semester as follows: English 1; Foreign Language 1; Social Science Course; Humanities Course; or Natural Science or Mathematics Course; and Physical Education 1.

Prospective Premedical and Predental Students. If a student wishes to pursue premedical or predental studies at Duke, the above course program for prospective science majors is entirely appropriate for him also, although he should enroll in the fall in chemistry, biology, or zoology—preferably chemistry—rather than another science. During his residence at Duke, a premedical student ordinarily will complete the following courses as prerequisites to admission to medical school: English 1 and 55-56 or 57-58; Chemistry 1-2, 61, 151-152; Biology 11-12 or Zoology 11-12; Mathematics 31-32; and Physics 51D-52D. In addition, one or two semester-courses in advanced zoology are normally taken. Premedical students must satisfy the foreign language proficiency requirement of the degree program they intend to pursue, whether A.B. or B.S. Medical schools requiring or recommending that foreign language be studied in college as a condition of admission ordinarily will accept any modern foreign language, and some will accept a classical language. The above information is generally applicable to predental students as well. In Freshman Week, an opportunity will be afforded all prospective premedical and predental students to confer with the University's premedical adviser.

Prospective Pre-Legal Students. Students who plan to prepare for law school may select their major academic work in any discipline. Courses that increase analytical skill and capacity for clear and concise expression (both written and oral) should be of special value to pre-legal students. Some courses frequently taken by freshmen pre-law students are the fol-

lowing: Business Administration 50 (with Mathematics 32 as a pre- or co-requisite); Economics 1-2; English 55-56 or 57-58 (for those excused from English 1) or one of the Freshman Literature Courses 21-26; History 1-2; Philosophy 41 and 48; Political Science 11; Sociology 91. A freshman may select one or more of the above courses as are offered in the fall semester to complete his course program for that semester.

Prospective Pre-Business Students. A student contemplating a career in business, and possibly a major in Business Administration, should consider enrolling in Business Administration 50 in the spring semester. In order to be admitted to that course, however, he must be qualified to take Mathematics 32 in the same semester. It may be necessary, therefore, that he enroll in Mathematics 31 in the fall semester. He may also wish to take Economics 1-2 in the freshman year.

Prospective Elementary and Secondary School Teachers. Those desiring to prepare for teaching in elementary or secondary schools should read the statement of the Department of Education on page 60 of this *Guide*. Usually, courses in that department are not taken by freshmen. However, courses in other departments required for teacher certification are available to freshmen and may be chosen to complete a course program for the fall semester. For example, all prospective elementary and secondary-school teachers are required to have a semester-course in mathematics, as well as two semester-courses in a laboratory science. To meet these requirements, therefore, a freshman might choose Mathematics 31 and any of the introductory sciences mentioned above in the section regarding Prospective Science Majors.

Prospective Pre-Theological Students. Rather than suggest specific courses which may be pertinent to freshmen expecting to enroll later in graduate professional theological studies, it is better to quote a statement on the subject by the American Association of Theological Schools:

> The student contemplating theological study should correspond at the very earliest opportunity with the school or schools to which he intends to apply and with the authorities of his church in order to learn what will best prepare him for the specific program he expects to enter. He will be likely to find under the guidance of the seminary that he should consider the following subjects:
>
> English language and literature; history, including non-Western cultures as well as European and American; philosophy, particularly its history and its methods; natural sciences, both the physical and the life sciences; social sciences, where psychology, sociology, and anthropology are particularly appropriate; the fine arts and music, especially for their creative and symbolic values; Biblical and modern languages; religion, both in the Judaeo-Christian and in the Near and Far Eastern traditions.

Some seminaries require Greek or Hebrew for admission, and many advanced biblical courses are offered in the original tongues; modern languages have a less direct but immensely educative role and are required at the graduate studies level.

It is the understanding gained in these fields rather than the total of credits or semester-hours which is significant.

Courses and Majors

The purpose of this chapter is to describe the courses of instruction primarily open to freshmen. Each department gives a brief explanation of the opportunities for a major in that department.

Following the course descriptions below, the term *one course* means a semester course and the term *two courses* refers to the sequence of two semester-courses offered in the fall and spring semesters. In summer pre-registration, freshmen are selecting courses only for the fall semester; on the Trial Course Program Card, list only fall semester courses.

Air Force Aerospace Studies

Aerospace Studies 2 (Fall), Defense of the United States

A study of the causes of world conflict, the problem of United States security, and the role of the armed forces as instruments of national policy. Required of all freshmen enrolling in the AFROTC program leading to a commission in the U.S. Air Force. May not be counted among thirty-two courses required for graduation. Half-course.

Aerospace Studies 51 (Spring), World Military Systems

A comparative study of free world military forces, Communist military systems, and trends in the development and employment of military powers. This course is required of all students who are enrolled in the

AFROTC program leading to a commission in the U.S. Air Force, and may be taken in the spring semester of either the freshman or sophomore year. May not be counted among thirty-two courses required for graduation. Half-course.

Aerospace Studies and The AFROTC Program

Freshmen desiring to compete for a commission in the Air Force while earning their degree should contact the Air Force Department of Aerospace Studies during Freshman Week. A few moments of the student's time will determine whether or not he has the basic requirements necessary to enroll in the program.

Students enrolling in the four-year AFROTC plan are eligible to compete for the Air Force Financial Assistant Grant program. This program includes full tuition, books, laboratory fees, and fifty dollars per month subsistence pay. There is no increased service obligation involved in accepting this grant. Attendance at a four-week Field Training Encampment is mandatory and is normally accomplished during the summer between the sophomore and junior years for recipients of Air Force Grants and between the junior and senior years for all others.

All cadets who are qualified for and interested in pilot training will participate in the flight instruction program in their senior year. This program involves academic instruction in ground school phase and a flying course that qualifies the students for a private pilot certificate.

For the freshman, the AFROTC program involves instruction in two courses: the first, Aerospace Studies 2, *must* be taken in the fall semester; the second, Aerospace Studies 51, may be taken in the spring semester of either the freshman or sophomore year. In addition, he must participate in the one-hour-per-week Corps Training period each semester that he is a member of the ROTC. This period meets each Monday, eighth period, throughout the normal school year.

African and Afro-American Studies Program

A Supervisory Committee, appointed in March, 1969, is actively planning an interdisciplinary major for undergraduates in African and Afro-American Studies, to be available by September, 1969. Such a program will not only draw upon existing courses in the Departments of History, Political Science, Sociology, Anthropology, and Economics and lead to the reshaping of others, but it will also help to establish new courses and seminars as well as opportunities for independent study. Some cooperation with North Carolina College in Durham and the Uni-

versity of North Carolina in Chapel Hill is probable, but the faculty-student Committee hopes to build the program mainly on Duke's own resources and strengths.

Anthropology

For courses in anthropology, see *Sociology and Anthropology.*

Art

Art 51 (Fall), 52 (Spring), Introduction to Art History

Art 51-52 serves as a general introduction to studies in archaeology, art history, and criticism. Emphasis is placed on the chronological development of architecture, sculpture, painting, and minor arts as material manifestations of culture of Western man from ancient to modern times. In addition to revealing cultural history, the course introduces the student to principles and terminology related to form, materials, and techniques in the visual arts and develops within the student some insight for critical judgment and discrimination of works of art. Although Art 51-52 are not prerequisites to upper-level courses, the orientation they provide is helpful in further art studies. Two courses.

Art 51P (Fall), 52P (Spring), Introduction to Art History

Same courses as 51-52 except that a weekly preceptorial meeting is added. 51P-52P are especially recommended for those who consider a major in art. Two courses and two preceptorials.

Art 53 (Fall), 54 (Spring), Beginning Studio

Art 53-54 are beginning studio courses with primary emphasis on drawing. They are prerequisite to further courses in painting or printmaking and may be taken by freshmen only by consent of the instructor on evidence of previous work. Two courses.

The Major in Art

The field of art embraces two areas—the practice of art and art history—which represent different, but not mutually exclusive, avenues for the acquisition of knowledge and experience in the visual arts.

Courses in the practice of art serve the purposes of a liberal education because they are concerned with basic skills in drawing, painting, and printmaking through which a student may gain sufficient experience to

realize his interests and aptitudes. The program at Duke does not offer professional training in specific skills, but a talented student may enter a graduate or professional school and expect to accomplish professional objectives within a three-year period of concentration.

Art history is a relatively new member of the academic family of humanistic studies which was formalized only in the early part of this century. The concept of "art history" belongs, however, to the eighteenth century when J. J. Winckelmann first perceived the value of interpreting works of art as human data to reconstruct the social, religious, cultural, and intellectual climate within which man lives at a particular moment of history. The popular notion of *appreciation,* as such, is not a function of art history. As an academic discipline, art history is first of all an aspect of cultural history and merges further with other humanistic areas, such as philosophy, religion, and literature. By the nature of its research methods and documentary sources it presupposes a concurrent development in language tools.

The two courses which will define for the beginning student the fields of art history and studio work are described above.

The student selecting art as his major will elect either art history or design for concentration. In design he will follow a prescribed sequence of courses designed to lead him from basic problems in drawing and design to the art of painting and graphics. In the history of art he will effect a chronological spread of area courses and select one area for specialization.

The Department offers an honors program in art history which leads the superior student into independent study and research as a prelude to graduate study in the field. Special lectures, traveling exhibitions, and art films are arranged by the department or the Duke University Student Union, and field trips are arranged in connection with art history and studio classes from time to time.

Biology

At Duke, two departments offer majors in the area of biological science, the Departments of Botany and Zoology. In recognition of the unified science of biology, the introductory course administered by each department addresses itself to this larger discipline. Furthermore, undergraduates majoring in either department are encouraged to take courses in the other; indeed, several courses are taught collaboratively, and the two departments occupy adjacent quarters in the Biological Sciences Building. Courses in biological science are also offered by the departments of Geology, Medical Science, Psychology, and Anthropology. Summer courses are available at the Marine Laboratory at Beaufort, North Carolina.

Two introductory courses in Biology are currently offered, either of which satisfies the prerequisites of either department for more advanced work. Although the courses differ considerably in their approaches to the field, the extensive overlap in the material covered makes it undesirable for any student to take both. An additional weekly preceptorial meeting is available in each course for those students who wish to satisfy the small-group learning experience requirement.

Biology 11 (Fall), 12 (Spring), An Introduction to Biological Diversity

A study of the diversity of plants and animals; their evolution, ecology, structure, function, and significance to man and his environment. Two courses.

Biology 11P (Fall), 12P (Spring), An Introduction to Biological Diversity

Same courses as 11-12 except that a weekly preceptorial meeting is added. Two courses and two preceptorials.

Zoology 11 (Fall), 12 (Spring), An Introduction to Living Systems

An inquiry into the common aspects of organisms; the physical and chemical bases of life; and the origin, perpetuation, evolution, and functioning of living systems. Two courses.

Zoology 11P (Fall), 12P (Spring), An Introduction to Living Systems

Same courses as 11-12 except that a weekly preceptorial meeting is added. Two courses and two preceptorials.

Botany

For the introductory courses in botany, see *Biology.**

The Major in Botany

As a fundamental division of biology, the plant sciences have a significant role in developing both the modern aspects of biological knowl-

*Entering students with unusual secondary school preparation in biology, e.g., two or more units of biology or attendance at an NSF Summer Institute, may qualify for advanced courses in botany. These students should seek an interview with the Director of Undergraduate Students in Botany during Freshman Week. Students with scores of 4 or 5 on the CEEB Advanced Placement Program Tests may elect advanced placement in botany.

edge and continuing the basic disciplines of classification and structure. The Department's curriculum for undergraduates thus seeks to provide the major with the theory and the laboratory and field training that will develop a broad working mastery of biological principles and be the foundation for advanced work.

Although botany is concerned traditionally with plant structure and function, this concern does not reflect the full province of the Department's undergraduate curriculum. Following the introductory biology course, a student majoring in botany is expected to select courses in four of the following basic fields: anatomy, ecology, heredity, morphology, physiology, or taxonomy. Later he has a wide latitude of choice in courses offered by the Department and other science departments. Since the breadth of possibilities is great, the major who discovers his particular interests early may best be directed into a curriculum which will prepare him for advanced studies in biochemical or molecular plant or animal biology, marine biology or biological oceanography, or college or secondary school teaching, and many others. Advanced courses in the natural and physical sciences may be counted toward the major.

The undergraduate major does not concentrate in a particular field of the plant sciences. With the recent advances in biology coming from techniques and concepts developed around plant materials, and the need for a broad basic knowledge of fundamental plant disciplines, the modern botanist must have a degree of competence in and an understanding of the whole field of plant biology and its contributing disciplines.

Recognizing its responsibilities in providing students with the opportunity to explore plant biology through the medium of independent study and research, the Department of Botany subscribes to a liberal program of training not directly connected with formal course work. The Department provides some financial support allocated specifically for undergraduate independent study in a program aimed at enrichment rather than acceleration. The work often carries credit and may involve study at other institutions or in territories outside the United States. Qualified students are often selected as participants in faculty research on campus or at the Marine Laboratory. Whether or not one qualifies for the departmental honors work or Graduation with Distinction, the major in botany with its biological implications should prepare the dedicated and willing student for later occupations in industry, education or a combination of research and academic pursuits.

Business Administration 50 (Spring), Elementary Theory of Economic Enterprise

Analysis of the internal resource allocation problem of the enterprise, of market structures, and the relationship between the two. Topics include marginal analysis, theories of competitive market structures, and introduction to special problems of finance, marketing, and production. Math 32 should be taken before or with Business Administration 50. One course.

Business Administration 50P (Spring), Elementary Theory of Economic Enterprise

Same course as 50 except that a weekly preceptorial meeting is added. The preceptorial will be offered by Professor McCullough of the Departmen of Religion and will focus on ethical issues that arise in the course. One course and one preceptorial.

The Major in Business Administration

The program in Business Administration is designed to provide an understanding of businesses and other economic enterprises and their influence on society. Emphasis is placed on the basic tools of analysis and underlying theory of organized economic activity as opposed to "first-job" type skills. The basic tools of mathematical analysis, information systems, organization theory, and economic theory are combined to develop a fundamental understanding of the role and function of business in society.

This liberal arts oriented program provides the foundation for those desiring further study in law, business, or the other social sciences as well as those planning to continue their education as leadership trainees in many organizations. In the over-all curriculum time is available to combine this program with in-depth studies in other areas of the student's choice, such as mathematics, the natural sciences, or the other social sciences. Within this over-all framework, provision is made for professional preparation in accounting.

Work leading to Graduation with Distinction is available for majors in the Department.

Chemistry

Chemistry 1 (Fall), 2 (Spring), General Inorganic Chemistry

The first semester is devoted to a consideration of the principles of chemical science. The properties of matter—gas behavior, solution phenomena, and quantitative aspects of chemical equilibrium—are related to the molecular structure of matter and further to the structure of the atoms themselves. The quantitative aspects of the principles are discussed extensively and in the laboratory, experiments illustrating these principles are carried out. In the second semester a systematic study of the chemistry of the elements is supplemented by laboratory exercises in the qualitative analysis of some twenty common ions by semimicro techniques. An introduction to organic chemistry stressing structural isomerism and functional groups is also included. Two courses.

Chemistry 1P (Fall), General Inorganic Chemistry

Same as Chemistry 1 except additional preceptorial meetings are offered biweekly. In each preceptorial three or four topics related to Chemistry 1 will be covered in some depth. Some possible topics are kinetic-molecular theory of gases, mass spectrometry of elements, calorimetric determination of bond energies, X-ray diffraction, and nucleation of crystals. *Students preregistering for Chemistry 1P should indicate their basis for interest and any special experience such as two years of chemistry, an unusually competent one-year course, participation in an NSF summer program, or special laboratory experience.* One course and one preceptorial. (See italicized paragraph under The Major in Chemistry.)

Special Chemistry 1 Laboratory (SL) (Fall)

A substitute for the regular laboratory in Chemistry 1. A group of 24 students with good laboratory background may elect a special laboratory featuring small research problems based on inorganic systems. Students will be asked to formulate hypotheses to explain the behavior of selected chemical systems and to devise and carry out experiments to test their hypotheses. *Students preregistering for this laboratory in lieu of a regular Chemistry 1 laboratory should describe their laboratory background* on the reverse side of the Trial Course Program Card.

Chemistry 42 (Spring), General Inorganic Chemistry

An honors course paralleling Chemistry 2 on a more theoretical level. Emphasis is given to molecular structure, inorganic chemistry, and solution equilibria. Selection for the course will be based upon a distin-

guished performance in Chemistry 1 or 1P and interest in a B.S. science major. One course.

Chemistry 61 (Fall), Physical Chemistry of Aqueous Solutions

Students receiving a score of 4 or 5 on the Advanced Placement Examination in chemistry may begin their study of chemistry at Duke with this course. The course involves an intensive study of chemical equilibria with special attention to the physical chemistry of aqueous solutions, ionic and molecular structure, and elementary thermodynamics. Laboratory experiments illustrate the principles of gravimetric, volumetric, and instrumental analysis. One course.

The Major in Chemistry

Chemistry is concerned with substances, their structure, properties, and the nature of the reactions which change one substance into another. In this sense it supports the basic biological and physical sciences, biochemistry, and the whole spectrum of para-medical studies. The field of chemistry is strongly vertical in organization: courses appear in sequence from general chemistry to the progressively more theoretical fields. Throughout the discipline the central concerns are emphasis on molecular structure, mechanism and energetics of changes in molecules, and the application of the principles of mathematics to interpret and predict them.

The Bachelor of Science degree is ordinarily elected by students intending to pursue advanced study in chemistry or a closely allied science. The Bachelor of Arts degree offers a grounding in most basic areas of chemistry while providing full opportunities for election of broadly related work.

The following sequence of courses is common to both major degree programs. *General Chemistry* emphasizes the general theory and behavior of matter in bulk and the structure, properties, and reactions of many elements and compounds. The Periodic Table and the chemical bond are stressed. *Organic Chemistry* describes the synthetic methods, systematic behavior, and the geometry of individual compounds of carbon as well as some of the theory involved. *Physical Chemistry* offers a critical, rigorous examination of the principles underlying all areas of chemistry including the states of matter, quantum phenomena, thermodynamics, and a thorough treatment of chemical kinetics. *Analytical Chemistry* treats in depth the theory of solutions and includes instrumental methods, such as spectrophotometric, electro-analytical, and chromatographic techniques. *Inorganic Chemistry* applies the principles of physical chemistry to a study of inorganic systems.

Depending on the type of degree and his interests, a student also

pursues advanced work in one or more of the following areas: inorganic chemistry, qualitative organic analysis, nuclear chemistry, chemical instrumentation, organic preparations, and physical-organic chemistry.

The Department of Chemistry recognizes its responsibility to those students whose secondary school preparation has been exceptional and whose ability has been clearly demonstrated. For these gifted students, the Department offers a different and challenging curriculum during the first three semesters aimed at enrichment rather than acceleration. The sequence is as follows: In the first semester, Chemistry 1P, supplemented by the special laboratory (SL) for those students with especially good backgrounds in laboratory work; in the second semester, Chemistry 42, an honors course paralleling Chemistry 2 in content but treating subjects in greater depth; and in the third semester, Chemistry 61P, a course in the physical chemistry of aqueous solutions to which a weekly preceptorial is added. Students may enter the sequence at any point or withdraw at any point; their selection is based on interest and background.

Classical Studies

Greek 1 (Fall), 2 (Spring), Elementary Greek

The purpose of these courses in the elements of Classical Greek is to provide a foundation for developing the ability to read Attic prose, and at the same time to introduce the beginning student to the variety and continuing importance of the Greek achievement. Two courses.

Latin 1 (Fall), 2 (Spring), Elementary Latin
Latin 63 (Fall), Intermediate Latin: Cicero; Latin 64 (Spring), Intermediate Latin: Vergil
Latin 91 (Fall), 92 (Spring), Latin Prose and Poetry
Latin 99S (Fall), 100S (Spring), Seminar in Latin

Latin 1 and 2 combine the fundamental grammar with reading of easy prose. Latin 63 and 64 are devoted to selected prose and Vergil's *Aeneid.* Students qualified to begin with Latin 91, 92 will devote the year to selections from prose writers such as Livy and Sallust and poets such as Catullus and Horace. The Freshman-Sophomore Seminar in Latin (99S, 100S) is available to students with exceptional preparation and interest as an alternative to Latin 91, 92; authors considered will normally be chosen from those read in 91, 92, depending on the interests of the instructor; emphasis is placed on literary criticism and evaluation. Each two-semester sequence of Latin 1-2, 63-64, 91-92, and 99S-100S counts as two courses. 99S and 100S each satisfies the small-group learning experience requirement.

Classical Studies 51 (Fall), Greek Literature 52 (Spring), Latin Literature

A critical interpretation of the major Greek and Latin authors read in English translation; works are drawn from the epic, lyric poetry, drama, history, and philosophy of both literatures. Two courses.

Classical Studies 53 (Fall), 54 (Spring), Greek and Roman History

The first term provides a survey of the political and intellectual history of the Greeks from the Bronze Age to the death of Alexander the Great and the beginning of the Hellenistic period; the second, a survey of the Roman world from the early republic to the fourth century A.D. Two courses.

Classical Studies 55 (Fall), 56 (Spring), Greek and Roman Art and Archaeology

A study of Greek and Roman architecture, sculpture, and painting from the second milennium B.C. to the later empire. In addition to slide lectures and discussions, students will have the opportunity to examine in detail pottery and sculpture from the Duke Classical Collection. Two courses.

Classical Studies 57S (Fall), 58S (Spring), Seminar in Classical Studies

The seminar topics will deal with aspects of the history, art, and literature of Greece and Rome, and will vary from year to year, dependent upon the interests of the instructor. Two courses.

Departmental Majors

Since the field of Classical Studies as normally understood encompasses ancient history, literature and philosophy, as well as Greek and Roman art and archaeology, a variety of disciplines, techniques, and emphases are involved. While his over-all aim will be an informed and critical view of the foundations of Western culture, the specialist may, for example, study ancient social and economic life through Greek and Roman town planning or through documents preserved on papyrus or stone inscriptions; or he may be concerned with the analysis of a literary problem on the basis of poetic imagery or through the study of the manner in which the texts have survived in the manuscript tradition. In order to accommodate the wide range of interests embraced in the field, three majors are available in the department: for students whose interests are largely literary, there is a choice between a Latin or Greek major; for students

who wish to emphasize history or archaeology, there is a major in Classical Studies. In each case, the program may be regarded either as background for later professional training in another field, such as law or medicine, or as a preparation for graduate work in Classics. Depending on the needs of the student, additional courses in fields such as modern languages, the sciences, or philosophy may be advisable.

The Greek major consists of six courses in Greek beyond the elementary level, with at least two of them at the senior-graduate level; the Latin major involves six courses in Latin above the third-year level, three of which must be at the senior-graduate level. A major in either language normally takes at least four courses in the other, depending on interest and need, and will be asked to demonstrate ability in prose composition in his own major language, either through an examination or completion of Latin or Greek 117, by the end of his final year. A major in Classical Studies chooses eight courses in Ancient History or Archaeology above the 100-level, including Classical Studies 195S, 196S, and two courses at the 200-level. He should also have a reading knowledge of Greek or Latin, corresponding to the undergraduate proficiency requirement in foreign languages, and may count two advanced language courses (above the level of 91, 92) as two of his major course requirements.

Students may apply for a semester at the Intercollegiate Center for Classical Studies in Rome during their junior year, at a cost roughly comparable to a term at Duke. The program combines a flexible classroom curriculum with visits to museums and sites in Rome and vicinity and longer trips to southern Italy and Sicily; the result is a unique opportunity to study a major segment of the ancient world—Greek, Etruscan, and Roman—at first hand.

Economics

Economics 1 (Fall), 2 (Spring), Principles of Economics

Economics 1 is concerned with the determinants of the level and growth of national income and output and with policies for combating problems such as unemployment and inflation. Economics 2 considers the determinants of the composition of the economy's output, and of the distribution of income; problems of agriculture, labor, international trade; and the role of government in a predominantly market economy. Two courses.

Economics 1P (Fall), 2P (Spring), Principles of Economics

Same as Economics 1, 2 except that a weekly preceptorial meeting on economic policy problems is added. Two courses and two preceptorials.

The Major in Economics

The courses of study comprising the economics curriculum have been designed with an awareness of the liberal arts tradition to which the University is committed. The Department feels strongly that its mission is not to train students for their first job after graduation but to instill those qualities of mind which will fit them for the responsibilities that will arise in their careers. Experience over the years has indicated that prospective employers prefer the broader background.

The major in economics focuses on the economic process—past, present, and future. Knowledge of this process is an important part of a liberal arts education. How society decides what to produce, how to produce, and who will enjoy the fruits of production in large part determines the nature of society—philosophically, socially, and politically.

The major in economics is concerned with the economic process from a conceptual and analytical point of view; it is especially recommended for those who intend to go on to graduate work in economics. It also provides an excellent background for students who intend to study in other social sciences, law, or history.

In the senior year, majors in the Department may pursue independent study leading to Graduation with Distinction.

Education

The Majors in Education

The main purpose of the Department of Education is to provide professional preparation for teachers and other personnel for the schools. For this reason the courses offered by the Department are of primary interest to students who intend to teach or to serve in other capacities in schools. Such courses deal with principles and materials of instruction and their application to the classroom. However, the Department offers several courses in the area of liberal education which will help in developing a better understanding of people and society. The courses in social and psychological foundations of education are in this category.

At the undergraduate level, Duke University prepares teachers for both elementary and secondary schools. Prospective elementary school teachers major in elementary education, since in this way they may best meet the dual requirements of gaining knowledge and skill in all of the areas taught in elementary school and in acquiring an understanding of child development and learning theory. The University prepares teachers for the secondary schools in the fields of art, English, foreign languages, physical education (women), mathematics, music, the sciences, and the

social studies. Prospective secondary-school teachers major in the academic department of their principal interest and should choose related work which will strengthen their preparation for a teaching career. There is a special program and a major in science education designed to provide a broad background in the sciences and mathematics.

An introductory course in psychology providing a background for understanding the behavior of children and adolescents should be taken in the sophomore year. Social Foundations of American Education or the History of American Education is also required for all undergraduate programs in teacher education. They are intended to acquaint prospective teachers with underlying viewpoints, problems, and issues of education. They should be taken in the junior year.

Students preparing to teach devote an entire semester of their senior year to courses in designated subject matter and professional education, and to student teaching. During the last half of this semester they are engaged in full-time observation and student teaching in schools.

Advisers in the Department of Education will help in planning a program that will serve individual student needs. For example, each student's program must be designed to meet the requirements of the state or states in which he desires certification. Students may also be helped by their adviser to work toward a decision as to whether or not they should teach and, if so, what subject or grade.

Anyone planning to teach who majors in another department should make an appointment with a Department of Education adviser prior to each registration period for the proper planning of his program. Such a contact will insure that a place will be available in the student teaching program in the senior year.

In the senior year, majors may pursue work leading to Graduation with Distinction.

Engineering Studies

See the Chapter on The School of Engineering on pp. 5-9 of this *Guide*.

English

English 1 (Fall), Freshman Composition

In English 1, each freshman receives the advantages of three traditional modes of instruction: the formal lecture, the group discussion, and the private conference. At the beginning of each week, the student attends a formal lecture at which the general lecturer discusses the reading

for the week, giving attention to its literary and rhetorical qualities. Later in the week, the student attends a meeting of his section (18 students). Here the section instructor directs a further discussion of the week's reading or talks about problems of composition which are pertinent to the class. At a prearranged time each week, the student meets with his instructor for a private tutorial conference. In this conference, the instructor reads, discusses, and grades the weekly theme, the topic of which is derived from readings in contemporary prose fiction and non-fiction. Here the student is given the reasoning behind the instructor's evaluation of his theme and an opportunity to explain his own position and to find ways of improving his work. One Course.

Students who have received a grade of 700 or above in the CEEB English Composition Achievement Test are excused from English 1. In this way, they also fulfill the English composition proficiency requirement for graduation, but do not receive course credit. In the fall they may enroll in English 55 or 57 and in the spring in one of the freshman literature courses numbered 21 through 26 or in 56 or 58, or in both.

A student who has taken English 1 may enroll in one of the freshman literature courses numbered 21 through 26 in the spring semester. A student who has made a *B*— or above in English 1 may, in the spring semester, enroll either in one of the freshman literature courses numbered 21 through 26 or in English 56 or 58, or in both.

English 1X (Fall), Special Writing Section

There is one section of English 1 given for those who have shown a particular aptitude for descriptive and narrative prose and who wish to undergo a further rigorous training in these types of writing taught by Mr. Reynolds Price. Final selection of students will be made during Freshman Week. Students who are excused from English 1 may nevertheless apply for English 1X. One course.

English 21-26 (Spring), Freshman Literature

The series of courses 21-26 offers specialized study in the traditional genres of literature and in special topics. The classes will meet three times a week; there will be frequent writing assignments. The courses will fulfill the distribution requirement in humanities; many of the sections in each course will be limited to seminars of 15 students and will fulfill also the requirement in the small-group learning experience. Open to all students. Students who have achieved a score of 4 or 5 on the CEEB Advanced Placement Program Examination in English will receive credit for English 20 and will have fulfilled one of the distributional course requirements in humanities; they may enroll in one of the courses in the 21-26 series if they so desire. Those with a score of 3 on the APP test in English will receive credit for one course in the 21-26 series upon

completion, with a *C* or higher, of a literature course in the English Department; for this purpose English 55 or 57 may be taken in the fall semester, or 56 or 58 or a course in the 21-26 series may be taken in the spring. The courses in the 21-26 series are as follows:

21. ***Studies in the Novel.*** A study of major themes and forms of the novel. One or two novels from earlier periods will be investigated, but the course will concentrate on nineteenth- and twentieth-century works. One course.

22. ***Studies in Drama.*** The appreciation of drama as a literary form. Plays from the ancient Greek drama to modern times will be considered. One course.

23. ***Studies in Drama and Poetry.*** Representative works of a small group of contemporary playwrights and poets will be examined. One course.

24. ***Studies in Poetry.*** A study of themes, techniques, and such forms of poetry as the ballad, the sonnet, the lyric, the ode, and short narrative poems. The readings are selected from British and American poetry of all periods. One course.

25. ***Studies in the Epic.*** A study of form, convention, theme, and the image of man in the epic, both classical and modern. Homer, Virgil, Dante, and some later writers are included. One course.

26. ***Studies in Special Topics.*** These classes vary from year to year, in accordance with interest and staff. The spring offerings will be announced in the preceding fall in time for registration. One course.

English 51 (Fall or Spring), Public Speaking

The ability to express oneself orally is a valuable asset to anyone and is a necessity for those going into the professions of law and the ministry. English 51 is designed to develop this skill and to give the student the poise and confidence necessary to think and speak freely before an audience. Particular attention is paid to the gathering and organization of materials. One course.

English 55 (Fall), 56 (Spring), Representative British Writers

The following works are studied in the fall semester: Chaucer's Prologue to *The Canterbury Tales* and at least two tales (read in Middle English); Shakespeare's *I Henry IV, Hamlet,* or *King Lear,* and one other play; John Donne's poetry (selections); and Milton's *Paradise Lost* (selections) and some of the shorter poems. In the spring semester: novels by Fielding (*Joseph Andrews*) and Dickens (*Great Expectations*), and selections from the poetry of Pope, Wordsworth, Keats, and Yeats. Two courses. (English 55 and 56 are open to those freshmen who are excused from English 1 and to those who present scores of 3 or above on the CEEB Advanced Placement Program Examination in English. English

56 is open also to those who have passed English 1 with a grade of *B*— or above.)

English 57 (Fall), 58 (Spring), Representative American Writers

Selections and complete works. The fall semester includes Poe, Emerson or Thoreau, Hawthorne, Melville, Whitman, Dickinson, and Twain; the spring includes James, Frost or Robinson, Crane or Dreiser, O'Neill, Faulkner, Hemingway, and others. Prospective English majors are advised to take English 55-56 instead of this course and to study American Literature in upper-level courses (English 165, 166, 173, 174, 175, 176). Two courses. (English 57 and 58 are open to those freshmen who are excused from English 1 and to those who present scores of 3 or above on the CEEB Advanced Placement Program Examination in English. English 58 is open also to those who have passed English 1 with a grade of *B*— or above.)

A first-year student who has made a *B*— (or above) in English 55 or 57 may enroll in a 100-series course in his second semester.

The Major in English

The study of literature is, and will always be, one of the broadest avenues to a liberal education. It holds wide opportunities to approach and synthesize the whole length and breadth of human knowledge and to deal, directly or indirectly, with the great minds of the past and present. These are, essentially, very "practical" functions just as, at the other pole, to study literature is to gain insight into the very practical art of communicating through the written word. But perhaps most of man's conscious activity takes place neither on a high metaphysical plane nor on the level of the daily job; on the middle plane where he often lives and acts, literature holds the finest resource for understanding human character and all its complexities, for acquiring a sensitivity to the human condition and its workable values. Finally, everyone has to some degree an aesthetic drive: the study of literature gives it depth, direction, and rich satisfaction.

The student choosing a major in English concentrates in the study of English and American literature. The English Department has a varied program of offerings, and the major is required to satisfy a pattern of distribution rather than to take specific courses. As a result, the major will find his academic program marked by flexibility and individual responsibility. Usually he will be able to follow his preferences within a wide range of English and American literature and can also take two or more courses in some restricted areas such as Elizabethan drama or nineteenth-century English literature or contemporary fiction, poetry, and drama.

The size and diversity of the Department also give him unusual freedom in the choice of his teachers. If he is wise, he will exploit the opportunity to select teachers who have differing approaches to literature and to classroom methods. He has, furthermore, a wide freedom in his program of other courses, though he is helped in his planning by a faculty member who acts as his academic adviser.

French

For courses in French, see *Romance Languages.*

Geology

Geology 1 (Fall), 2 (Spring), Physical Geology; Historical Geology

Geology 1 and 2 offer a broad survey of the earth's rocks, sediments, and life. Physical Geology deals with the forces which continually modify the earth's changing surface, including weathering, erosion, deposition, volcanism, and mountain building, as well as the structure and composition of the earth's interior. Lectures are supported by examination in the laboratory of some of the more common minerals and rocks and the study of land forms using topographic maps and aerial photographs. Historical Geology examines the broad aspects of the physical history of the earth's crust and the evolution of life. The close interplay between the physical and biological history of the earth is stressed. Lectures are supported by examination of the major types of fossils, and study of geologic maps in the laboratory. Two courses.

Geology 1P (Fall), 2P (Spring), Physical Geology; Historical Geology

Same courses as 1-2 except that preceptorials are added. As part of the preceptorials monthly field trips are made during the fall semester to study examples of geological processes discussed in the classroom. During the spring semester field trips are taken to the classic Paleozoic rock section in the Appalachians of Virginia and West Virginia and to the Triassic section in the Durham and Deep River Basins of North Carolina. (Enrollment is restricted to forty persons.) Two courses and two preceptorials.

Geology 53 (Fall), (Also listed as Botany 53)

This course is designed for students who are considering oceanography as a career as well as those who are simply interested in the subject. The

subject matter is divided into physical, chemical, geological, and biological oceanography, with emphasis placed on the latter two. In October a weekend field trip is taken to observe the estuarine, beach, and near-shore environment. For students who are seriously interested in later graduate studies in oceanography, an attempt is made to arrange for them to accompany the *R. V. Eastward* on a research cruise. One course.

The Major in Geology

Geology is the science concerned with the study of the earth. Some of the interests of geologists are the physical processes acting on the earth's surface (water, wind, ice), the composition of the earth (rocks and minerals), its structure (continents, ocean basins, mountains), its economic products (oil, gravel, water, uranium), and its past history (origin, shifting positions of land and sea, evolution of life).

Men and women versed in geology are utilized by federal and state governments and industry to help solve such varied problems as the location of petroleum deposits or the nature of the moon's surface. A considerable number of geologists are engaged in a wide spectrum of research in such specialties as oceanography, seismology, volcanology, and astrogeology.

Basic training of a geologist, following the introductory survey courses, is taken in two fields: (1) minerals and rocks, (2) stratigraphy and structure. Additional courses depend in part on the specialization desired by the student. Basic training extends beyond geology, into other disciplines: physics, chemistry, biology and mathematics. Fundamental principles and knowledge from all of these fields are used within the broad framework of geology. In some instances in-depth study will be necessary within a related science for the student to be trained in a specialized field of geology. Thus the paleontologist must be trained in biology and the mineralogist in chemistry.

Undergraduates are encouraged to become involved in the various staff research activities.

German

German 1 (Fall), 2 (Fall, Spring), Elementary German
German 63 (Fall, Spring), 64 (Spring), Intermediate German
German 91 or 91P (Fall), 92 or 92P (Spring), Introduction to German Literature
Certain 100-Level Courses for Properly Qualified Freshmen

Elementary German (1 and 2) obviously must concentrate on grammar and structural language tools, adding as much reading of illustrative

material as time allows. Intermediate German (63 and 64), on the other hand, is chiefly concerned with reading (short stories, poems, etc.), combined with certain necessary grammar review. The facilities of the language laboratory are particularly designed for students in both of the first two years of German. Laboratory exercises are aimed at sharpening auditory comprehension, increasing fluency, and raising the general level of student language performance. German 91 and 92, as well as 91P and 92P, provide an introduction to German literature through reading and study of representative German authors. In the case of 91P and 92P a weekly preceptorial meeting is added to the basic course. Preceptorials permit the student interested in maintaining his proficiency in the language to combine his interest in German with a small-group learning experience. Students desiring only the basic course in the fall semester should request German 91; those wishing the preceptorial in addition to the basic course should request 91P. Each two-semester sequence of German 1-2 and 63-64 counts as two courses. German 91 and 92 each count as one course; German 91P and 92P each count as one course and one preceptorial.

Freshmen entering The Woman's College who qualify for German 91 are eligible to apply for residence in the German Corridor in a dormitory on The Woman's College Campus. A small group of freshmen women will be admitted, along with members of the sophomore, junior, and senior classes, to this living-learning corridor. A native German-speaking associate will be in residence. Any student interested in residence in the German Corridor is invited to correspond with the Dean of Instruction in The Woman's College, giving particulars of her qualifications.

A number of 100-level courses in German are available for freshmen with the necessary proficiency. Those desiring such courses should consult the Director of Undergraduate Studies in German during Freshman Week.

The Major in German

Germany and German-speaking countries have contributed many men of genius in a wide variety of fields: poetry, the novel, philosophy, music, medicine, psychology, and most of the natural sciences. A study of the German language is obviously a desirable and even required tool for access to their achievements in these varied areas. A first-hand acquaintance with the German language, with the literature and social background of the Germanic countries, is therefore valuable and, in some cases, indispensable both to the future specialist and to the well-rounded liberal arts student. Germany is a major state of central Europe. Knowledge of its language, culture, and civilization is essential for knowledge of the history and culture of modern Europe, and of Western civilization.

A German major selects eight semester courses in the Department

beyond the intermediate level. The German major is also asked to choose several courses among the various humanities, i.e., other literature courses, including English or American or Comparative Literature, French, Spanish, or Russian literature as well as suitable courses in philosophy, history, religion, art and music, and linguistics. Study in these areas rounds out a liberal education.

The aim of the Department is to place language and literature study within the framework of Germanic civilization and European culture in general. The poets and writers of world influence (Goethe, Schiller, Hölderlin, Heine, and the modern figures of Rilke, Thomas Mann, and Hermann Hesse) are seen against the background of great musicians of Austrian and German birth (Bach, Mozart, Beethoven, Schubert, Schumann, and Brahms) as well as the achievements of their greatest, most influential thinkers (Kant, Schopenhauer, and Nietzsche.)

What are the benefits of such a major? The purely cultural benefits cannot easily be summarized. Just as Goethe and Kant, Nietzsche, Mann, and Rilke have made significant contributions to world culture, so the figure of Goethe's Faust stands beside Hamlet and Don Quixote as one of the great figures in Western literature.

Beyond its contribution to a liberal arts education, this major leads into teaching (at all levels: elementary, secondary school, college, and university) and toward the Foreign Service as well as into such channels, potentially, as the export and import trade with German-speaking countries (Germany, Austria, and Switzerland).

An opportunity for the experience of foreign study is offered through the Duke summer study program in Münster, Germany, as well as through approved Junior Year Abroad programs of other colleges and universities.

The Department offers an honors program leading to Graduation with Distinction.

Greek

For courses in Greek, see *Classical Studies.*

History

History 1D (Fall), 2D (Spring), A History of European Civilization

Aware that almost every student who enrolls in Duke University will have had courses in history, the History Department has attempted to provide a course for freshmen which will be instructive and interesting not

only to those students who have had little or no history, but also to those who have studied history for several years. The introductory course offers a student an opportunity to understand better how his own society has developed. It also helps him to appreciate present-day problems in a way which the study of the past alone can supply—by examining both the developments that gave rise to these problems and the more general questions of historical causation. The study of European civilization provides a broad view of the civilization that spread over much of the world and that forms the principal component of our own heritage. The course begins with the ancient Greeks and in the second semester reaches the present. It also furnishes an intellectual framework into which the student can fit his further study of such elements of civilization as art, literature, economic systems, government, and science, as well as more intensified study of European or American history. In tracing the impact of European civilization on the rest of the world, it provides an introduction to the relationships between Europeans and non-Western peoples.

Equally important for the college student is the ability to evaluate critically historical writings and interpretations and to draw conclusions himself from the primary sources from which history is written. Consequently, considerable emphasis is placed upon encouraging the student to think critically and upon training in the techniques of historical investigation. Weekly discussion sections with faculty of all ranks who teach in the course provide an opportunity to examine ideas presented in the lectures and to discuss readings chosen by the faculty leader of the discussion section. Two courses. These courses qualify as small-group learning experiences required of students in the freshman and sophomore years.

History 1S (Fall), 2S (Spring)

History 1S-2S is designed as a seminar-type course for students who have had a good background in European history, who can read and comprehend rather large amounts of historical material in a semester, and who are capable of examining historical problems with a minimum of attention to historical chronology. The Department determines those who are qualified by consideration of SAT verbal scores, completion of three units of high school history, and an interview with the student during Freshman Week. Students who have earned a score of three or higher on the Advanced Placement Examination in American history may also be admitted to the course.

The class will meet less frequently than the regular freshman sections, and each section of 1S-2S will number approximately twelve to fourteen students. Class discussions will be on readings assigned during the previous period, and debates may be arranged between members of the class on various topics. Various collections of source materials, pamphlets,

paperback books, and articles dealing with some of the leading personalities and the major issues in history will be used during the semester. Semester projects in the form of written papers will be required. Short papers—critiques, book reviews, and essays—will also be assigned during the term. Two courses. These seminars qualify as small-group learning experiences.

The Major in History

History seeks to develop insights into a particular body of human activity whether it be revolution in Russia, dictatorship in Napoleonic France, or the building of empires in the New World. To impart these insights, courses in history strive to cultivate far-ranging minds and the kind of trained intellects that delight in pursuing a line of research or developing a good argument. As worthy components of a liberal education these courses espouse the view that the unexamined life is not worth living and the unexamined world is not worth living in.

At Duke a major in history is planned to allow students almost complete freedom in choosing their courses within the framework of the University philosophy of undergraduate education. Normally all majors are required to take the introductory course. In their remaining semesters of history, majors have considerable freedom of choice in selecting the six semester courses that constitute a major in History. The single mandatory stipulation is that two courses must be in an advanced seminar or on the senior-graduate level so that every student will have at least some opportunity for intensive investigation on a subject in an area of special interest. Beyond the work in history, the department urges majors in the department to broaden their understanding by exploring widely in the various disciplines other than history. The latitude provided within these requirements is perhaps best suggested by the increasing number of pre-medical students now majoring in history.

The History Department is in a position to offer an unusually wide range of subjects to prospective students, since all the fields offered by the Department are open to undergraduates. These fields are American (including Diplomatic, Colonial, Nineteenth Century, Twentieth Century, the South, Civil War and Reconstruction, and Intellectual history), Western European (including Ancient and Medieval, the Renaissance, the French Revolution, Nineteenth and Twentieth Century), English history and the British Commonwealth, Russian, Latin American, African, Indian and Pakistani, Far Eastern, Military, and Naval history as well as the history of science.

In addition to the individual courses offered in the various fields, the History Department has introduced a special program of seminars with enrollment limited to no more than a dozen in each to encourage students who are interested in doing advanced reading and research. Specially

qualified students may also do independent reading and research under the supervision of a member of the staff. A senior seminar is provided for superior students, particularly those working toward Graduation with Distinction in History. But whether one qualifies for "Distinction" or not, a major in history should help prepare a thoughtful student to enter the many occupations in life which are open to graduates of a liberal arts college.

Italian

For courses in Italian, see *Romance Languages.*

Latin

For courses in Latin, see *Classical Studies.*

Mathematics

Mathematics 31 (Fall), 32 (Spring), Introductory Mathematical Analysis

Most students will begin their mathematical training with the course entitled Introductory Mathematical Analysis. The language of logic and sets is taken up first. This is followed by the concept of a function. Special attention will be given to trigonometric, logarithmic, and exponential functions. Graphs and applications of such functions will form a basic part of this course. In the section on plane analytic geometry, the equations of straight lines, circles, parabolas, ellipses, and hyperbolas will be derived and properties of these curves will be studied.

In another part of the course the concepts of the calculus will be taught. The discussion of many of the types of motion that are of interest, e.g., the motion of molecules in a gas, the flight of an airplane, and the flight of a rocket, require ideas that form the basic part of calculus. The calculus concepts also enable one to find the lengths of curves, surface areas, and the volumes of irregularly shaped solids. In this course students will be given the tools and calculus concepts that will enable them to solve many of the above-mentioned types of problems.

This course will meet four hours per week, two hours in large lecture sections, and two hours in small sections. Some small sections are designed for students with common interest. There will be sections for engineers and students who have demonstrated marked proficiency in

mathematics. In order to qualify for the latter small sections, students must present four units of college preparatory mathematics and SAT verbal and mathematical test scores of 740 or above. The Mathematics Department also hopes to offer some small sections for students interested in the relations between mathematics and the humanities. (Students who are interested in these sections should indicate this on their preliminary registration card.) Two courses.

Mathematics 51 (Fall or Spring), Introduction to Digital Computation

The first portion of the course deals with the nature of a digital computer, the function of its parts, and the process of programming to solve simple problems. In the second part of the course, the student learns an algorithmic language for presenting problems to computers. This language is similar in form to the English used to state mathemtical problems and may be used with many kinds of computers. Each computer translates a problem-solving procedure written in the algorithmic language and then solves the stated problem. Practical mathematical methods are also developed for the machine solution of problems in certain areas of biology, engineering, mathematics, physics, and social sciences. One course.

The Major in Mathematics

Knowledge of the areas encompassed by mathematics and what this "science" has to offer can be gained from a discussion of its three main branches: algebra, geometry, and analysis. The division known as algebra stemmed from arithmetic and now includes such fields as abstract algebra, group theory, and number theory. The algebra to which students are introduced in high school is a powerful tool for solving certain types of problems, but it is only one of the many types of algebra. Some of these various abstract algebras have found applications in the physical and social sciences.

The second branch of mathematics, geometry, had its origins in the space apperception of primitive man. The Greeks, combining space concepts with logical and abstract reasoning, developed a postulation or axiomatic system known as the Elements of Euclid. The Arabs added trigonometry to the field of geometry, and the French philosopher Descartes introduced the notion of coordinates, which permitted algebra to enter into the study of geometry. Differential geometry, which arose during the eighteenth century, played an important role in the development of Einstein's theory of general relativity. The first half of the nineteenth century saw the development of several non-Euclidean geometries. The newest subfield of geometry is that of topology. It treats those aspects of

figures which do not change under deformation. This newest member of the geometry family came into being at the turn of this century and in the short time since its inception has engulfed all classical geometrics and has had a marked influence in many other areas of mathematics, as well as in such unrelated fields as medicine and psychology.

The third branch of mathematics is called analysis; it was initiated by Leibnitz and Newton toward the end of the seventeenth century. Here a new basic concept in mathematics was added, that of a limit. This has been one of the most fruitful concepts of man; e.g., we use it in rate probems and in finding the volumes of irregular bodies. Many developments in chemistry, physics, and other sciences can be traced directly or indirectly to the notion of a limit. A few of the subfields of analysis are calculus, real and complex function theory, differential equations, infinite series, and measure and integration theory.

The student selecting mathematics as a major can concentrate in any one of the three branches just mentioned, or he can select those courses in each branch which appeal to his own particular interests. To these fields should be added the field known as applied mathematics which is playing an increasingly important role in scientific and technological developments. The applied mathematician is interested in the development of mathematics for its own sake as well as in the application of mathematical methods in such fields as engineering, physics, economics, and management. The student interested in applied mathematics should elect courses in analysis, computing, probability, statistics, and mathematical logic. He should also be interested in a related field such as physics or economics.

In the senior year, a major may pursue independent study leading to Graduation with Distinction.

Medieval and Renaissance Studies

The Undergraduate Program in Medieval and Renaissance Studies

The program in Medieval and Renaissance Studies is guided by a committee of professors from several different departments. The creation of this program is the Committee's response to two powerful challenges, the one, the challenge of the subject itself, and the other, the challenge of Duke's new curriculum.

With the growing interest in, and enlarged understanding of, the Middle Ages and Renaissance, scholars see with particular clarity the need for breadth of experience in studying the men, culture, and achievements of these periods. The study of Medieval and Renaissance Europe

inevitably carries the student from one field to another. A single language or literature never gives breadth enough and literary developments cannot be studied apart from philosophy and theology. Furthermore, Medieval and Renaissance history lies obviously at the heart of this area of study, and some of the most exciting insights are provided by the plastic arts and music. The field of study is then, by its very nature, catholic. Here, if anywhere, departmental divisions of knowledge are meaningless. The unity of intellectual and artistic development in Medieval and Renaissance Europe challenges the modern university to find ways in which students may without hindrance pursue the study of that culture in various academic disciplines and departments.

There is, besides, the challenge of educational change here at Duke. An essential reform achieved in the new curriculum encourages the individual student to investigation and inquiry and to the formulation of his own intellectually valid area of concentration. With the help of his adviser, the student can now have the opportunity to combine *suo more* his interests and strengths of background in a program. The possibilities of combinations are almost limitless. The traditional idea of a field of concentration is thus greatly enlarged.

Out of these challenges has grown this new program, the first interdisciplinary concentration to be adopted at Duke under the new curriculum, and one of the first undergraduate programs of concentration in Medieval and Renaissance studies in the nation. Within the framework of this program, the student interested in Medieval or Renaissance studies, or some combination of both, finds a way to pursue his studies that is best suited both to the nature of the field and to the newly expanded concept of the major at Duke.

The Program in Medieval and Renaissance Studies is divided into four areas of study: Fine Arts (Art and Music), History, Language, and Literature (Classics, English, French, German, Italian, and Spanish), and Philosophy-Religion. A major in this Program consists of at least eight courses drawn from the non-introductory courses in these areas, and including three courses in each of two areas. Besides courses already listed in the Medieval and Renaissance periods, provision may be made for independent study in any of the four areas.

The student entering the Program is urged to acquire a working knowledge of language—ancient, medieval, or modern—pertinent to his interests. In each case, the student's program will be tailored to his interests and needs. Each program of study must be approved by the Committee on Medieval and Renaissance Studies, after the student's adviser has passed on it. Further details about the program are available from the advisers or from the Chairman of the Committee.

Music 5 (Fall), 6 (Spring), Basic Skills of Music

Designed to develop logical, accurate, and efficient aural perception of the melodic, rhythmic, harmonic and formal elements of tonal music; and a flexible control of these elements at the keyboard. Half-course each semester.

Music 15 (Fall), Fundamentals of Music

The physical properties of sound; principles of diatonic tonality approached through analysis of excerpts drawn from standard repertoire; generation of prototypical examples. One course.

Music 47 (Fall), 48 (Spring), Applied Music

Private instruction from artist-teachers is available in voice, piano, organ, and orchestral instruments. A course of study may be continued for four years and should lead the student through the establishment of secure technical foundations into serious study of the interpretation of musical styles and literature. Prospective music majors should begin this work in the freshman year. General students with previous study backgrounds are also welcome. A limited number of class sections are available in applied music. Departmental vocal and instrumental organizations and ensembles may also be taken for course credit. One-quarter course or half-course each semester.

Music 51 (Fall), 52 (Spring), Introduction to Music Literature

Designed for the general student who wishes to experience and investigate the musical heritage of Western civilization and to develop critical insights into musical styles, forms, and techniques. Representative works of major composers from the seventeenth century to the present constitute the primary materials of the course. No musical skills are prerequisite.

Music 51P (Fall), 52P (Spring), Introduction to Music Literature

Same courses as 51-52 except that a preceptorial is added each semester, thereby providing a small-group learning experience of the type required of students in the freshman and sophomore years. Two courses and two preceptorials.

Music 76 (Spring), Tonal harmony

Study and practice in homophonic harmonic and formal techniques found in the common practice period, 1700-1850. Chromatic inflections

of harmonic material and formal analysis of typical formal procedures. One course.

A Major in Music

The study of music is usually approached through one of three different divisions of the field. Each of these may be considered a "specialization," but a balanced knowledge of all three is essential to the training of a fine musician. These branches are (*a*) musical performance, (*b*) music theory, and (*c*) music history and musicology.

In order to achieve highest competence in *musical performance*, a solid background of technical discipline within a specified medium (for example, voice, piano or other instrument) is necessary. This is best begun in the early years and should be well developed at the time of college entrance. At whatever stage one decides on the study of music, however, the acquaintance with and some mastery of either voice or an instrument is essential to the full development of musical understanding.

The study of *music theory* encompasses a thorough investigation of the styles and technical resources utilized in compositions which represent the continuity of musical development in Western civilization. Those which are still experimental and may constitute bases for the art of the future are also studied. The student is encouraged to work with this material in original constructions.

Music history and *musicology* are branches of general historical study as well as of music. The manifestations of a civilization in terms of its culture are as revealing as those of its politics. Courses which cut across the various historical periods and consider music within the context of sociological, economic, and geographic milieu are designed for general students as well as music majors. Individual research is stressed; and it is expected that students will synthesize work in music history with that done in other departments of the humanities, such as languages and literature.

Naval Science

Naval Science 101 (Fall), Principles of Naval Organization and Management

This course presents naval management practices and concepts; lines of command and control; organization of logistics, service, and support; major components of the Navy and Marine Corps; and shipboard organization. One course.

Naval Science 102 (Spring), Naval Ships Systems

Ship structure, elements of design, stability, control, compartmentation, and communications and propulsion systems are studied in relation to safe operation and combat or service effectiveness of the ship. One course.

Naval Science Studies

The NROTC, through its four-year Naval Science Course, provides an outstanding opportunity for the undergraduate student to be awarded a commission in the Navy or Marine Corps at the same time he receives his baccalaureate degree. NROTC students are eligible to compete for the regular NROTC program which provides full tuition, fees, books, $50 per month retainer pay, and the opportunity to participate in summer cruises with fleet surface and air units in Atlantic and European waters. Seniors may obtain their private flying license at Navy expense. In addition, the opportunity is available to continue toward a graduate degree prior to reporting for active duty.

Students already accepted in the NROTC, or those contemplating enrollment in the program after arriving on campus, should register for Naval Science 101.

Six Naval Science courses and additional laboratories as specified by the Department are required for a commission; only four courses may be counted for graduation.

Nursing Studies

For courses in Nursing, see the Chapter on The School of Nursing.

Philosophy

Philosophy 41 (Fall), 42 (Spring), Introduction to Philosophy

These courses provide an introduction to philosophy through the study of its main problems. In Philosophy 41 there will be an emphasis on those problems that come to the fore when one thinks seriously about the nature of reality and of our knowledge of it. In Philosophy 42 there will be an emphasis on the problems of conduct and the problems of moral and political value.

Both of these courses usually involve a certain amount of reading in the philosophical classics. Although neither course is standardized, a student

in Philosophy 41 might find himself reading from the works of Descartes, Berkeley, Hume, and Russell. In Philosophy 42, it might be Plato, Kant, and J. S. Mill. No attempt is made at a comprehensive treatment of the history of philosophy. In these courses students with a talent for abstract reasoning tend to do well; others have to work to develop this ability. Two courses.

Only one of Philosophy 41, 42, 43S, and 44S may be taken for credit. It should be borne in mind that although freshmen are not normally eligible to take Philosophy 93 or 94, these courses *are* open to second semester freshmen who have already had a course in philosophy—any of the Introduction courses or Philosophy 48.

Philosophy 43S (Fall), 44S (Spring)

In content these are the same as Philosophy 41 and 42, respectively. The enrollment in each section of these courses is limited to fifteen students and they are conducted as seminars. These courses qualify as small-group learning experiences. Two courses.

Philosophy 48 (Fall and Spring), Logic

Philosophy 48 deals with the analysis and evaluation of reasoned arguments. It provides a general method for formulating and testing the validity of many different types of argument. The course also aims at making the student sensitive to alternate interpretations that may be put on an argument, and aware of the part played by ambiguity and vagueness.

The student learns to use some of the techniques of modern symbolic logic and gains some sense of what is meant by rigor in formulation and proof, and of the nature of formal sciences. One course.

The Major in Philosophy

Philosophy grows out of a group of questions and issues that are as old as our civilization. Most intelligent persons have pondered them at some times in their lives. What sort of universe do we live in? Is it mental, physical, or both? Does it have some over-all purpose or plan? And what about man? Is there some purpose or meaning in life? Does man have free will or is his behavior determined? The philosopher seeks to answer these questions or, failing that, at least to understand them.

Gradually, there have arisen divisions, or major areas in philosophy, each of which can be studied in some isolation from the others. For example, questions of free will may raise questions about the nature of caused behavior, the nature of motivation, of choosing, of intending, and of thinking. These issues form a separate area which we call philosophy

of mind. Again, the question of what our aims and purposes are or should be raises further questions which belong to the discipline we call ethics, which investigates such topics as the nature of moral standards, how they are established and justified, and with the analysis of such concepts as *good, ought,* and *right.*

Philosophers in trying to answer these questions have found themselves raising in turn such questions as: How do we establish the truth of what we say? How do we test our beliefs? What constitutes good evidence? What is the difference between knowing and merely believing? This area in philosophy is called the theory of knowledge or epistemology.

When we offer answers to our questions, or offer the solution of a problem, we try to give reasons for our answers. We try to justify and show the soundness of our conclusions. The study of this activity is logic, a branch of the theory of knowledge. Logic deals among other things with the nature of arguments, the differences between sound and unsound reasoning. Out of it grows the investigation into the ways in which general principles or laws are established in the sciences, which we call inductive logic. Related to this is the study of the ways in which conclusions are established in legal arguments, in art criticism, and in evaluation.

Philosophy is old, inasmuch as philosophers have been working with these problems since the dawn of civilization. And yet philosophy is always new, since succeeding centuries encounter new problems and discover new ways of approaching the old. In the twentieth century, philosophy has discovered a new vantage point from which to examine its problems—that of the study of language and the relations between language, thought, and the world. Viewed from this new standpoint, many of the traditional issues can be seen clearly in a way that never was possible before. And yet the contemporary emphasis on language, which reaches into nearly every corner of philosophy, gives rise to new and special problems of its own, which are studied in formal logic, semantics, and the philosophy of language.

Here then are a few of the major areas in philosophy. Within them one can find subordinate and related studies such as philosophy of science, philosophy of art, philosophy of law, and philosophy of religion.

This brief sketch cannot do more than suggest the way in which the parts of philosophy grow out of and sometimes discard earlier parts; new issues, new fields develop in philosophy. Philosophy, moreover, is one of the few subjects which studies its own history. Part of the study of philosophy is the history of philosophy, that is, the study of what the great philosophers of the past, Plato, Aristotle, Aquinas, Kant, and Hume, to name a few, had to say on the fundamental issues, and, in fact, which issues they regarded as fundamental. Ancient philosophy is not outmoded because it is ancient any more than ancient art is outmoded.

Philosophy is self-conscious in a way that other disciplines are not. For it seeks a total view of things and in trying to answer its questions, it turns and investigates its own methods and techniques in giving answers. The philosopher, as it were, is always trying to look over his own shoulder to see what he is doing. In this awkward posture, he advances as best he can against the multitude of problems that beset him, while at the same time wrestling with the question "What is Philosophy?"—perhaps the most difficult question of all. It will not be surprising to learn that philosophy has always been controversial; despite large areas of agreements, there are many issues on which philosophers differ widely.

A major in philosophy offers an opportunity to study most of the areas within the discipline. It does not, in itself, lead directly to any career except teaching. But students planning a career in other areas will often major in philosophy because they wish to avoid specializing too soon, or because they recognize the general value of philosophic study in becoming aware of the methods, assumptions and goals of whatever field one works in, and because philosophy, by stressing this broad vision, contributes to the development of cultured and thoughtful individuals. Knowledge of philosophy has always been considered necessary for any educated person.

In the senior year, a major may pursue independent study leading to Graduation with Distinction.

Physical Education (Men)

Two years of participation in an approved program of physical activity are required for graduation unless a student is excused for medical reasons. The requirement is met by satisfactory completion of four semesters of physical education activity courses or by an alternate form of activity approved by the Men's Physical Education Department. This work must be started in the freshman year and is normally completed in the sophomore year.

Physical Education (Men) 1 (Fall), Foundation of Physical Education

In this program an attempt is made to present the *why* and *how* of physical activity to male freshmen. During the first two class meetings, students are given a general orientation to the total program as well as the following battery of tests: agility run, vertical jump, back extension and flexion, hand grip strength, height and weight measures, swimming test, and posture pictures. These scores are recorded on a master score card on which percentile norms have been indicated. This card is used

for reference throughout the semester, and for recording future types of tests relating to muscular endurance, balance, coordination, heart efficiency, and the like. Following the preliminary test pattern, students are provided an opportunity to become acquainted with various concepts of preventive medicine and health maintenance. This involves information concerning weight control, cardiorespiratory fitness, training techniques, relaxation techniques, body type and health, fatigue, rest and recreation.

Students are guided into areas of need as indicated by the preliminary tests. Those who cannot swim are enrolled in beginning swimming; those who lack coordination, strength or endurance are enrolled in individual development; whereas, those in need of improvement in relation to posture, weight control, or certain physical disabilities or limitations, are enrolled in adapted physical education. Those students not involved in the above phase of the program follow a program designed to orient them to a variety of physical activities including tennis, golf, badminton, volleyball, gymnastics, swimming, fencing, and others. Students are grouped in accordance with their basic potential in order to provide the most effective learning experience. Emphasis in this program is to provide a basis for more intelligent activity selection in the future, develop an awareness of physical potential, enhance present levels of health and fitness, and personalize program offerings to meet individual needs both present and future.

Spring Semester

The second semester of the freshman year involves a continuation of the guidance pattern established. Students whose needs can best be met in certain phases of the program are directed into those activities (e.g., beginning swimming, adapted P.E. and individual development) which can adequately achieve this goal. Other students may select courses from among the various offerings available. They have an opportunity to improve present skills and experience satisfaction in learning new skills. Freshmen are encouraged to learn those activities which will be satisfying and enjoyable and adapted to their body potential to the end that they will be motivated to want to continue to be physically active throughout their lives.

In each semester of his sophomore year, the student is guided into one of the following sports: basketball-handball, golf, swimming and life saving, water safety, tennis, volleyball, gymnastics, individual development, fencing, bowling, soccer-lacrosse, badminton, archery, and combatives.

Students who are physically limited may take a medically prescribed program of adapted physical education.

Physical Education (Women) 1 (Fall), 2 (Spring)

Two years of participation in an approved program of physical activity are required for graduation unless a student is excused for medical reasons. The requirement is met by satisfactory completion of four semesters of physical education activity courses or by an alternate form of activity approved by the Women's Physical Education Department. This work must be started in the freshman year and is normally completed in the sophomore year.

Students may elect activity courses to meet the requirement with one exception; namely, students who are unable to pass a survival swimming test must take a swimming course.

Because of the wide range of physical education abilities among entering freshmen, a series of placement tests is given during Freshman Week. Students with exceptional ability in sport skills may enroll in *X* classes in which they progress at a maximum rate of speed. Freshmen with specific needs in posture and sport skills may take special work in one of these areas during the first half of the semester. Classes in adapted physical education are arranged for students who are restricted from vigorous activity. Other students elect activities such as archery, golf, hockey, modern dance, riding, swimming, and tennis. The winter activities including badminton, basketball, bowling, fencing, gymnastics, swimming, volleyball, and several types of dance. In most courses, there are beginning, intermediate and advanced sections.

The Major in Physical Education

The Woman's College

A major in physical education is offered for students of the Woman's College who are interested in human movement and healthful living. Areas of study include: motor learning; the effects of exercise on human functions; sports and dance in education and recreation; and health affairs. The major may be used as preparation for teaching physical education and health; for recreational leadership; for entering physical therapy or graduate study; or for its intrinsic contribution to undergraduate education.

The Director of Undergraduate Studies in the Woman's Department of Health and Physical Education will assist students in designing a course of study to fulfill their educational goals. Those preparing to teach should consult the Education Department regarding certification requirements.

Freshmen women who wish to major in physical education should take Biology 11-12 or Zoology 11-12. They may also take Physical Education 101S in the first semester and Physical Education 103 in the second semester. If a pre-physical therapy program is planned, Chemistry 1-2 may be taken in the freshman year. Students with special interest in dance, recreational leadership, or health should consult the departmental adviser.

Physics

The Department of Physics offers three different courses at the introductory level: (1) Physics 1-2, primarily for those students who do not intend to major in science (good preparation in algebra is required, but not necessarily in trigonometry); (2) Physics 51D-52D, for science majors (other than physics majors), engineers, pre-medical students, and others who wish to elect it (Mathematics 31 must be taken prior to or concurrently with Physics 51D-52D; freshmen students are well advised to postpone Physics 51D-52D to the sophomore year); and (3) Physics 41-42, for freshmen intending to major in physics.

In scope the introductory courses include the study of mechanics, heat, optics, acoustics, electricity and magnetism, and atomic and nuclear physics. As examples, the concepts dealt with in two of these fields can profitably be given in more detail. In mechanics one considers such things as forces and accelerated motion, mechanical energy, and the conservation laws for momentum and energy, rotational and planetary motion, oscillatory motion, and gravitation. Again, in electricity and magnetism, which are taken up together because of their close relationship to one another, the properties of electric and magnetic fields produced by stationary and moving charges, the forces on electric charges in electric fields and on currents in magnetic fields, and direct and alternating current circuits are studied.

Physics 1 (Fall), 2 (Spring), Introductory Physics

This course traces historically and experimentally the development of the important principles of physics. Three lectures and one two-hour laboratory per week. Two courses.

Physics 41 (Fall), 42 (Spring), Fundamentals of Physics

For students interested in majoring in physics; usually taken in the freshman year. Basic principles of physics, mainly classical, at a level similar to Physics 51D-52D, but with emphasis on laying a foundation for further study. Three lecture-recitations and one three-hour laboratory

per week. Prerequisites: approval of the department; Mathematics 31 or equivalent (may be taken concurrently). Two courses.

Physics 51D (Fall), 52D (Spring), General Physics

Basic principles of general physics treated more quantitatively than in Physics 1-2. Designed for students entering medicine, engineering, and the sciences. Not open for credit to students who have completed Physics 1-2 or 41-42. Students planning to major in physics should enroll in Physics 41-42 in their freshman year. Three lectures and one three-hour period devoted to discussion and laboratory work each week. Prerequisite: Mathematics 31 or equivalent (may be taken concurrently). Two courses. 51D-52D qualify as small-group learning experiences.

The Major in Physics

Physics has been recognized more and more as one of the most absorbing subjects in the natural sciences. Many of the most important discoveries in this century have been in the field of physics. In the last decade, for instance, the study of elementary particles and the invention of the Maser and Laser have had far-reaching effects on our basic knowledge of matter. The study of semiconductors that led to the invention of the transistor has greatly increased our insight into the nature of crystalline solids and has also resulted in a breakthrough for the electronics industry. The rapid development of physics in the last decade has shown the need for more persons in basic physics, in applied physics, and in the teaching profession.

The Department offers a full program for a major. The sequence of courses is usually introductory physics, intermediate modern physics, mechanics, electronics, thermodynamics and kinetic theory, electromagnetic theory, optics and spectroscopy, quantum mechanics, and an advanced physics laboratory that includes seminars. The undergraduate does not specialize in a given field of physics but receives an extensive training in several basic areas. This prepares him for graduate work in physics or work in other sciences and in engineering.

Senior majors who have demonstrated their ability in course work and in the laboratory can pursue independent research and study in a program leading toward Graduation with Distinction. At all levels there exists the opportunity to become aware of the nature of the research being carried out in the fields of nuclear physics, particle physics, the structure of molecules and solids using both microwave and optical techniques, the properties of matter at temperatures approaching absolute zero, and theoretical physics.

Physics majors usually take several advanced courses in mathematics, and are also expected to take a course in college chemistry. Additional

work in chemistry is recommended. As a whole, the work elected by the undergraduate major provides a desirably broad liberal arts base. This background is especially important for the person planning to become a professional physicist since he will soon become specialized.

Political Science

Political Science 11 (Fall), The American Political System

Political Science 11 provides an introduction to the principles and practices of the government of the United States. It includes a consideration of such topics as: constitutionalism and the ways of restricting political power; the role and influence of political parties and pressure groups; means of achieving effective relationships between the President and Congress; ways of making bureaucracy responsive and responsible; federalism in theory and practice; the judicial function, with special attention to U. S. Supreme Court decisions involving freedom of speech, freedom of religion, equal protection of the laws, and related issues of personal liberty; a selected number of issues in the arena of domestic and foreign policy. During the spring semester the student may take any 100-level course not restricted to upperclassmen. One course.

Political Science 11S (Fall), Freshman Seminar in American Government and Politics

Attention is given to selected topics concerning the American political and governmental system. Enrollment is limited to twelve to fourteen students and preference is given to prospective majors in Political Science. Satisfies the small-group learning experience requirement. One course.

The Major in Political Science

The Department of Political Science seeks to convey an understanding of the philosophies, practices, and problems of government and politics. Political science is concerned with the perennial effort to reconcile the claims of justice and power, liberty and authority. In pursuing this broad objective a variety of materials and approaches are used: historical, legal, institutional, philosophical, empirical, and quantitative. As a consequence, political science is a broadly based social science, one sharing the aims of a liberal arts education as well as one evoking concern for an understanding of the public policy problems of our time. Political science seeks to understand why human beings behave as they do in the arena of politics. It is concerned both with the collection of empirical data about such behavior, with an examination of the process of decision-making

and with the normative judgments which influence a political decision. Although of benefit to those students seeking a broad, liberal education, the study of political science is likely to be of special usefulness to those interested in a career in law, politics, business, journalism, teaching, foreign service, and government employment.

The student majoring in political science begins with the course or seminar on the American Political System. In addition he must take seven courses in the Department, including at least two 200-level courses or 200-level seminars; at least one course must be taken in each of the three fields.

A Political Science major will normally take at least four related courses in the departments approved by the Political Science advisor. Such courses are usually in the departments of economics, history, philosophy, psychology, and sociology. Interdisciplinary courses may be counted as related work.

In the area of *Political Theory,* courses are offered in political philosophy from Plato to modern times, in American political thought and in empirical theory and methodology. In the field of *American Government and Politics,* attention is focused upon problems of constitutional law, civil liberties, the bureaucracy, governmental planning, and urban and metropolitan problems. Also emphasized are the less formal aspects of political activity including political behavior in elections, activities of political parties and pressure groups, and the legislative and judicial process of decision-making. In the field of *Comparative Government and Politics,* attention is focused on the political processes and institutions found in Europe, Asia, Africa, and Latin America. Special attention is given to the problems of political development in the new states. In the field of *International Relations,* the student may select from among courses concerned with international politics, law, and organization. Courses are also given on American foreign policy.

In all four areas attention is given to problems relevant to contemporary concerns, such as a comparison of democratic and totalitarian theories and practices, the politics of mature and underdeveloped nations, and the relationships of law and power, both domestically and in the international arena.

The Department of Political Science makes provisions for independent study for qualified juniors and seniors and offers undergraduate seminars. A senior seminar open to qualified majors leads to the preparation of an honors thesis and to Graduation with Distinction.

Psychology 70S (Fall), 71S (Spring), Freshman Seminars in Psychology

The Psychology Department will offer seminars available to freshmen entering in the fall of 1969. These seminars will promote intensive exploration of one or two topics of special interest. They will not serve as prerequisites for other courses in the Department.

Interested students entering Duke as freshmen in the fall may apply for a seminar by writing to the Director of Undergraduate Studies, Department of Psychology, Building 9, Duke University. Students will be notified whether or not they have been accepted before registration in the fall. In the letter of application, the student should supply the following information.

1. The name of the seminar he hopes to take.
2. A brief statement giving the reasons for wanting to take the seminar.
3. A brief description of those experiences and achievements he feels would support the application. Note should be taken in the following sections of the qualifications preferred of applicants for the respective seminars.

70S.1 *Adolescence and Identity.* A consideration of theories and research on psychological development from puberty to adult status with emphasis on a concept of personal identity. Readings will include sources such as Erikson, *Identity* and Kenniston, *Uncommitted.* One course.

Applicants for this seminar should have completed advanced placement work (or the equivalent) in high school. No particular area of advanced study is required provided that the student has received some college level or equivalent course work in one or more areas during his high school years. Applicants should specify their advanced placement (or equivalent) experience.

70S.2 *The Pre-School Years.* Observation of and selected experiences with the children at the Psychology Department's laboratory preschool will provide the basis for examination of the early social, emotional, and intellectual development of young children. ½ course.

Preference will be given applicants who have had advanced placement work (or its equivalent) in high school in the social studies and humanities.

70S.3 *Psychological Effects of Social Pressure to Change.* Theoretical analysis of how social pressure affects a person's perceptions, motivations, judgments, and behavior. The analysis will include consideration of some of the different kinds of social pressure that may be brought to bear, such as persuasion, demonstrations, and sit-ins. One course.

Applicants for this seminar should show a strong interest in the scientific

study of social behavior. Among evidences that would be considered supportive are the following: advanced placement or college level work during high school in biology, chemistry, physics, or mathematics; summer experience in scientific research, such as National Science Foundation–supported summer projects.

70S.4 *Current Research in Biological Psychology.* Survey of recent work about a dozen prominent topics in biological psychology including: biological basis of memory, psychophysiology of vision and other senses, neuronal activity, organization of nervous system, evolution of species-behavior, neurology of motivated behaviors. Readings will primarily be articles which have appeared in Scientific American since 1950. One course.

Applicants should present evidence of a strong interest or background in natural science especially as demonstrated by independent reading background, high school advanced placement courses, summer research experience in National Science Foundation–sponsored programs, or the like.

Psychology 92, 93, 94, 95 (Spring)

Psychology is the study of behavior and experiences of living organisms. The discipline of psychology utilizes a variety of methods to describe, understand and predict behavior. Depending upon the nature of the particular problem, psychological study seems to share the character of the natural sciences on some occasions, and to be classed appropriately with the social sciences upon others. The Department of Psychology at Duke seeks to recognize the diversity of its component fields by offering four courses that reflect different representative concerns: Psychology 92 stresses how organisms learn, perceive and know; Psychology 93 emphasizes the biological bases of behavior; Psychology 94 covers representative theories of personality; and Psychology 95 surveys both theory and research pertaining to the growth and development of human beings. All of these courses are open without prerequisite to second semester freshmen and upper-classmen. Collectively, these courses are intended to give beginning students an opportunity for involvement with specific fields and methods of investigation in psychology. Each, one course.

The Major in Psychology

Majoring in psychology in a liberal arts undergraduate program does not prepare a student for immediate practical work in the field. Rather, the chief objective of the program is to give students some background of psychological principles and methods and some understanding of how psychological inquiry is conducted. Because a student may find that the substance of psychology differs from his preconceptions of it, he will

probably be in a better position to decide upon the desirability of psychology as a major after having had exposure to psychological issues afforded by several first-level courses, such as 92 or 93 and 94 or 95.

The student majoring in psychology is required to complete eight courses in the Department. One of these must be selected from 92 or 93, and one from 94 or 95. One course in quantitative methods is required, and this requirement may be fulfilled by taking certain courses in the Department of Mathematics or by a statistics course in the Department of Psychology. One course is required from a series of offerings concerned with the design and execution of psychological research. The other four courses are open to the student's own selection.

For the major who is interested in and capable of moving in this direction, the Department offers several opportunities for intensive involvement with the discipline. There are small group discussions available in a tutorial program as well as the opportunity to work closely with the faculty in laboratory courses and in independent study projects. As psychology touches upon many related fields of study, the Department encourages and assists students in planning interdisciplinary programs with other departments. Finally, there is a series of courses leading to Graduation with Distinction.

Religion

The academic study of religion is integral to liberal education. A clear distinction is made between the study of religion (the role of the Department of Religion) and the practice of it (the role of the Chapel and other campus ministries). The curriculum in religion is determined by the subject around which the department is formed, the various areas and methods for the study of religion, and the intention of increasing and disciplining the student's understanding of the religious histories, phenomena, and problems brought into focus by each area and method of study.

All the courses described below are available to freshmen and provide introductions to several of the areas and methods of the study of religion. The courses are offered each semester in multiple sections.

Religon 50 or 50D (Fall and Spring), The Old Testament
Religion 52 or 52D (Fall and Spring), The New Testament
Religion 55 or 55D (Fall and Spring), The Religion of The Bible

These courses study the biblical literature in the light of its origins in the history and religion of biblical times. The student is also introduced to the methods employed in the study of the Bible (historical, critical, theological, and phenomenological) and to their results.

Inasmuch as the Bible contains the primary literatures of the basic

religious traditions of the West, these courses, conceived as humanities studies, are intended to help the student, through a creative apprehension of the past, to become aware of the significant role of biblical religion in the development of Western thought.

Religion 55 is a one-semester course in both Jewish and Christian biblical literature. Some students may want to elect a two-semester course sequence: Religion 50 (the Old Testament) and Religion 52 (the New Testament). Each of these courses, however, may be taken without the other.

Some sections of the courses (50D, 52D, and 55D) are designated discussions-section courses and qualify as small-group learning experiences required of students during their freshman and sophomore years. They vary from the normal pattern of three class meetings per week. Discussion sections will have two class meetings followed by a third session for which the class will be divided into discussion groups of twelve students. Freshmen desiring discussion sections should register for 50D, or 52D, or 55D. Each section provides credit for a semester-course and a discussion section.

Religion 57 (Fall and Spring), Introduction to the History of Religions

The introductory course in the history and phenomenology of religion is a study of primitive religions, Hinduism, Buddhism, Islam, and some other religions. The course is concerned not only with the historical origins and development of these religions but also with recurring religious elements and phenomena, such as the distinction between the sacred and the profane; religious myth, rite, and symbol; and such phenomena as initiation, sacrifice, and pilgrimage. The study aims primarily at understanding and is set in the context of increasing encounter and exchange between Asia and the West. One course.

Religion 59 (Fall and Spring), Problems in Theology and Ethics

The introductory course in the area of Christian life and thought is attentive to philosophical, theological, and cultural problems, such as the existence of God, ethical theory, religious language, and the relation of religion and culture. The course is set in the context of the modern and contemporary world. One course.

Religion 70S (Fall and Spring), Freshmen Seminars in Religion

Seminars for freshmen (Religion 70S, offered each semester) are designed to create an unusual learning situation. Devoted to various special topics (e.g., Myth, Symbol, and Literature: the Fiction of Herman Hesse), the seminars will consist of small group discussions of designated

readings. It is hoped that this experience will give the student both a deeper understanding of the study of religion and a growing confidence in his ability to analyze and discuss religion in a non-confessional setting. The seminars meet the small-group learning experience requirement for students during their freshman and sophomore years. One course.

The Major in Religion

The major in religion is a live option for students whose vocational aim is law or medicine, for those anticipating scholarship and teaching in religion, or one of the various ministries of religious communities, or some governmental and social services. It is also an attractive major for students who desire a broad, liberal education in the humanities.

The curriculum in religion is divided into five areas: biblical studies, studies in Christian life and thoughts, history of religions (including Judaic studies), religion and the social sciences, and religion and the humanities. Majors take Religion 100 (an introduction to the resources and methods for advanced study in religion) and six courses in at least three of the five areas listed above. The six courses may include one (introductory) course below the 100-level and must include a junior or senior seminar.

The department also offers to superior students a program leading to Graduation with Distinction. To qualify for distinction a major must concentrate in one area of the curriculum under the guidance of an adviser.

Romance Languages

Proficiency Courses

The following courses numbered 1, 2, 63, and 64 are open to freshmen who seek to demonstrate proficiency in foreign language either by passing 63, 64 or by demonstrating proficiency in placement tests which will be administered at the end of each semester.

French 1 (Fall), 2 (Spring), Elementary French
Italian 1 (Fall), 2 (Spring), Elementary Italian
Spanish 1 (Fall), 2 (Spring), Elementary Spanish

Intensive aural-oral introduction with careful reading of edited texts. Recitation supplemented by laboratory sessions. Two courses. (Special sections designated *X* are offered for students who have had two years of the language but who have not placed in 63.)

French 63 (Fall), 64 or 64P (Spring), Intermediate French
Italian 63 (Fall), 64 (Spring), Intermediate Italian
Spanish 63 (Fall), 64 or 64P (Spring), Intermediate Spanish

Integrated course in speaking, reading, and writing. Systematic review of basic grammar. Extended reading. Laboratory sessions. In French and Spanish 64P weekly preceptorial meetings are added to the basic courses. Students desiring only the basic course should select French or Spanish 64; those desiring, in addition, the small-group learning experience provided by a preceptorial should choose 64P. French, Italian, or Spanish 63-64: Two courses. French or Spanish 63-64P: Two courses and one preceptorial.

Elective Courses

French 181 or 181P (Fall), 182 or 182P (Spring)
Italian 181 or 181P (Fall), 182 or 182P (Spring)
Spanish 181 or 181P (Fall), 182 or 182P (Spring)

Intensive beginning language courses for students, including freshmen, who have gained proficiency in another language. In courses 181P and 182P, weekly preceptorial meetings are added to the basic courses. The preceptorials provide opportunity for more extensive oral practice and development of conversational skills. Students desiring only the basic courses should select 181 and 182; those desiring, in addition, the small-group learning experience provided by a preceptorial should choose 181P and 182P. 181-182: Two courses. 181P-182P: Two courses and two preceptorials.

90-Level Courses

The following 90-level courses are open to freshmen who have attained proficiency equivalent to, or above, that achieved by completion of courses 63, 64. Such proficiency is demonstrated in CEEB Achievement or Duke placement tests.

French 91 or 91P (Fall), 92 or 92P (Spring)
Spanish 91 or 91P (Fall), 92 or 92P (Spring)

Introduction to literature from medieval period to contemporary. Extensive readings. Lectures in the foreign language with opportunity to develop skills in writing and speaking. In courses 91P and 92P, weekly preceptorial meetings are added to the basic courses and provide opportunity for further study in materials related to the courses. Students desiring only the basic courses should select 91 and 92; those desiring, in addition, the small-group learning experience provided by a precep-

torial should choose 91P and 92P. 91-92: Two courses. 91P-92P: Two courses and two preceptorials.

French 93S (Fall), 94S (Spring)
Spanish 93S (Fall), 94S (Spring)

Seminar topics to be announced. Interested freshmen may inquire about topics in Freshman Week. Two courses. These seminars qualify as small-group learning experiences.

French 97 (Fall and Spring)
Spanish 97 (Fall and Spring)

Intensive instruction in the spoken language on contemporary prose. Open to freshmen if places are available. One course.

100-Level Literature Courses

The following 100-level literature courses are open to freshmen who have achieved a score of 3 or higher in the CEEB Advanced Placement Program in the appropriate foreign language.

French 100 (Fall), Masterpieces of French Literature

Special emphasis on developing critical techniques. One course.

Spanish 117 (Fall), Medieval Spanish Literature

One course.

Spanish 156 (Fall), Representative Writers of Spanish American Literature after 1880

One course.

Spanish 163 (Fall), The Generation of 1898

Emphasis on novel and essay. One course.

The Major in French or Spanish

When a student elects to concentrate in French or Spanish, he has decided to study in depth two important aspects of a particular culture: the language and the literature. At Duke he may elect either a language or literature major. Each channel will require courses in both language and literature, but in different proportions. Skill in the use of the language will provide insights and appreciation of literary works, and

conversely acquaintance with literary works will strengthen the language skills. Both language and literature will create appreciation and sympathy for the people whose culture they represent.

The study of a national literature must be made within the perspective of the humanities and history. We therefore try to balance the major literary program by incorporating into it related study in history, fine arts, and other literature. In the language major related study is desirable in other languages and in linguistic theory.

Students majoring in French or Spanish will find regular extracurricular activities which put the practical knowledge of the languages to use. There are honorary societies and informal supper meetings of language groups where conversation is carried on in French or Spanish. There are a French Corridor and a Spanish Corridor on the campus of The Woman's College, under the direction of resident native women, where the students pledge to use the foreign language exclusively. Freshmen women who have achieved proficiency may apply to the Dean of Instruction of The Woman's College for acceptance to these corridors.

Students may also take advantage of Duke's association with the Vanderbilt Abroad programs or the Junior Year Abroad programs of other colleges and universities.

In the Senior year, especially qualified students may pursue independent studies leading to Graduation with Distinction.

Freshmen who, by reason of foreign residence, have special language competence must be classified by the Director of Undergraduate Studies.

Russian

For courses in Russian, see *Slavic Languages and Literatures.*

Slavic Languages and Literatures

Russian 1 (Fall), 2 (Spring), Introduction to the Russian Language

These courses introduce the structure of the Russian language. The main objective is to familiarize the student with those features of Russian —its inflectional nature and verbal aspects—that are likely to seem strange to one accustomed to speaking English. Two courses.

Russian 63 (Fall), 64 (Spring), Intermediate Russian Language

The chief goals of these courses are those of acquiring the basic vocabulary needed to express ideas in Russian, increasing reading speed with the aid of a dictionary, gaining practice in sight reading, and oral

practice. The last is especially valuable since it encourages thinking in Russian rather than translating thoughts from English into Russian. Two courses.

The Major in Russian

Like the more traditional language majors, the major in Russian emphasizes the study of culture, literature, and history as well as language. Both pre- and post-revolutionary Russia are, of course, included in these studies.

Today the reasons why an American should study Russian and the Russian people are more compelling than ever. In recent years the Soviet Union has dramatically and irrevocably emerged as a young, vigorous, and aggressive world power. The need for persons with a command of the Russian language, and with training in some aspect of Soviet life, or the ability to view a recognized discipline against Soviet backgrounds, is widely recognized. Russian is a language in which a critical shortage of experts exists; and the establishment of preferential government grants for those students who pursue graduate studies in Russian attests to this fact.

Moreover, Russian is the mother tongue of over 100 million people. It is also the administrative language of the Soviet Union. Hence, it is an acquired language for another 100 million non-Russian citizens of the USSR and can serve to unlock the world of other groups within the Soviet Union. These peoples include the Slavic minorities such as the Ukranians and the non-Slavic members like the Georgians and the peoples of Siberia. Russian is the only bridge between the latter groups and the outside world.

In addition to these immediate needs for learning Russian, sight is not lost of the importance of earlier Russian contributions to the culture of our time. Classical Russian literature of the nineteenth century, with such names as Pushkin, Dostoevsky, and Tolstoy, has a place alongside the great periods of flowering of Western and Eastern culture. Other Russian contributions in linguistics, literary theory, and history are just now beginning to be appreciated.

Russian studies present a challenge, but one well worth the effort. Although it must be admitted that Russian is a difficult language, none of its difficulties is insurmountable. Of great help is the fact that Russian is an Indo-European language and has formal categories and a basic syntax little different from those of other members of the Indo-European family like Latin and English. As the student of Russian probes more deeply into his field he will also be struck by the similarities between Russian culture and the culture of the Western world, similarities that are often obscured by superficial differences. He will be equally impressed by the often deep differences lying under apparently similar and analogous

institutions. It is the mark of the expert to be able to distinguish between them.

The purpose of the Russian major may then be summarized as the development of persons who, as a result of a thorough and scholarly study of the Russian language and Soviet institutions, have the foundation on which to build the further knowledge so necessary to those whose role will be to understand the Russian world and to interpret this world to their own countrymen.

For those freshmen who may eventually go into graduate work in the Slavic field, attention is drawn to the fact that the Department of Slavic Languages and Literatures offers two courses in Polish literature in translation and is planning to offer courses in the Polish language beginning in 1969-1970. These courses will be open only to juniors and seniors.

Sociology and Anthropology

Sociology 91D or 91S (Fall or Spring), Introduction to Sociology: Concepts and Approaches

This course is designed to give students an explicit awareness of the social factor in men's lives by presenting major aspects of sociology. Students will learn the vocabulary, assumptions, and modes of analysis used by sociologists, who seek to understand how various social phenomena are patterned and how they interrelate. Topics may vary from year to year but will typically include the following: bases of consensus and conflict within social systems, types of social change, deviance as a social phenomenon, institutional behavior, social movements. Some attention will also be given to how sociology is related to allied disciplines, such as anthropology and psychology. One course.

In keeping with the revised curriculum, Sociology 91 in the fall semester will be taught in two different modes: (*a*) the first, designated 91D, will consist of two lectures a week by a senior staff member and one discussion hour per week by a junior staff person; (*b*) the second, called 91S, will consist of three section meetings a week with limited enrollment in each section, to be taught as a seminar by a junior staff member. Both 91D and 91S qualify as small-group learning experiences. Students are invited to indicate which mode they prefer when they register for this course. *Final placement, however, is contingent on staff resources.*

Sociology 91xS (Fall), Introduction to Sociology

A special section of Sociology 91 is offered for those especially interested in the study of human behavior or those who may consider a major in one of the social sciences. This section will be conducted as a seminar

and limited to a small number of qualified freshmen selected on the basis of interest and high SAT scores. This course qualifies as a small-group learning experience. One course.

Anthropology 93 or 93D (Fall or Spring), General Anthropology

This course is an introduction to physical anthropology, with a focus on human biology and the evolution of modern Homo sapiens. It deals with the origin and development of man, his morphological relations with the other primates, and his nature as the "human animal." Although each instructor has his own approach to the subject, most devote attention to the interpretation of human fossils and the archeological record, to variation in human genetics (race) and its relation to environmental factors, and to problems concerning the biological basis of such human characteristics as sexuality and aggression. One course.

Anthropology 94 or 94D (Fall or Spring), Social and Cultural Anthropology

This course explores the various principles of human social organization through the analysis of societies ranging from non-literate or "primitive" to industrial civilizations. The functional character of technological, and political kinship, and economic and religious institutions is explored, and the interrelationships between them examined in terms of comparative studies. The influence of economic factors on family organization, and the relation both of these elements have to the political system, might be illustrated by comparing the situation in an African society to that in an Asian one. Again, some instructors emphasize material from "the third world," others stress the role of society in the structuring of belief, whereas still others deal with psychological or ecological interpretations. One course.

In accordance with the revised curriculum, both Anthropology 93 and Anthropology 94 are taught in two different contexts: (*a*) the first, designated 93D and 94D, consists of two lectures a week by a senior faculty member with the third meeting a small discussion section conducted by a junior member of the staff; (*b*) the second, designated 93 and 94, consists of three lectures a week given by a senior faculty member. 93D and 94D qualify as small-group learning experiences. *At registration every attempt is made to give the student his preference, but final placement depends on staff resources.* There are no prerequisites for either 93 or 94, and since they are completely independent courses, they may be taken singly or in any order the student prefers.

The Major in Sociology

Sociologists study patterns and processes in the network of human relationships we call society. Their basic subject matter is human inter-

action occurring at all levels: in small groups, in communities and in large organizations. Whenever people interact with each other or with their environment, there is material for research.

As one of the developing social sciences, sociology is involved not only in delineating human behavior, but with understanding it. Most sociological research is the result of intellectual curiosity, a desire to comprehend the general underlying conditions that produce, maintain, and transform social life. Sociologists seek to develop generalizations and theories from their inquiries into areas such as race relations, community structure, and unconventional behavior. Along with the other liberal arts, sociology enriches an understanding of man, his cultural patterns, and society.

The Department of Sociology and Anthropology offers a varied program to undergraduates who desire to specialize in the systematic study of human behavior. A general course introduces the student to the scope, concepts, and methods of sociology while preparing him for more specific study in areas such as industrial relationships, the family, urban studies, race relations, mass communications, and demography. Other special areas of study include social stratification, occupations and professions, social psychology, analysis of the life cycle, and collective behavior.

The Department provides its majors with opportunities for learning the skills needed for sociological research. Courses are offered in methodology, sociological statistics, and sociological theory. Advanced undergraduates will be encouraged to participate actively in one of the research projects of the faculty.

The Major in Anthropology

Anthropology is a comparative discipline which studies mankind everywhere, in all aspects of his nature and behavior, and freely draws on other social sciences and biology to arrive at an integrated view. A student choosing anthropology as his major might begin his training by enrolling in introductory courses in sociology and zoology, following them with general and cultural anthropology as preparation for more advanced work in anthropology.

The discipline developed originally from a natural-history approach to the comparative study of man, including his physical makeup and his customs. Today anthropologists retain a wholistic interest in man but usually work in one of several subdisciplines. Physical anthropologists study the origin and development of man's physical nature and his place in the biological world. Their major emphasis is the study of fossils, genetic processes, and contemporary primate species. Psychological anthropologists investigate the individual's mental and emotional characteristics and growth, in cross-cultural perspective and in relation to universal human needs. Archaeologists and prehistorians concern them-

selves with events and processes of man's unwritten past. Anthropological linguists work with contemporary languages, as well as languages of the past, and also trace the relationship between language and culture. Social and cultural anthropologists, who form the largest group, determine the principles underlying human social and cultural behavior of all kinds. Contemporary tribal peoples, peasant societies, new nations, religious and other cultural revival movements, even the modern city—all form part of their subject matter.

The demand for well-trained anthropologists is keen. Many kinds of positions are open to anthropologists with universities and museums, and with state, national, and international organizations. Wherever peoples of diverse cultural backgrounds live and work together, the knowledge and skills of anthropologists prove of value.

Spanish

For courses in Spanish, see *Romance Languages.*

Zoology

For introductory zoology courses, see *Biology.*

The Major in Zoology

The complex nature of modern biology is reflected in the diversity of programs which are open to Zoology majors. Students who are primarily interested in obtaining a broad, basic training in zoology will find that a wide variety of courses in genetics, ecology, morphology and physiology is available. Or students may specialize in such "interdisciplinary" subjects as physiological ecology, biochemical genetics and biophysics, or more strictly zoological subjects such as animal behavior and vertebrate biology. At the more advanced levels (i.e., juniors and seniors) students are encouraged to pursue their studies independently of formal courses, and to undertake research, directed readings, tutorials and other special projects.

Much of the recent progress in biology has come, not from the expansion of traditional fields of botany or zoology, but from the incorporation of ideas and techniques derived from the physical sciences and mathematics. As part of their biological training, most zoology majors need to become familiar with at least the elements of calculus, physics, and organic chemistry. The Zoology Department nearly always requires

introductory courses in these subjects and frequently recommends additional work in the departments of Chemistry, Physics, and Mathematics.

Students who score 3 or better in the CEEB Advanced Placement Program Examination in Biology, or who have completed two years of high school biology and wish to by-pass the introductory course, should see the supervisor of freshman instruction in zoology early in Freshman Week.

Fill out all cards with ballpoint pen or in ink.

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BULLETIN OF DUKE UNIVERSITY

Information for Prospective Students



Annual Bulletins

For *Bulletin of Information for Prospective Students*, apply to Office of Undergraduate Admissions, Duke University, Durham, N. C. 27706

For *Bulletin of Undergraduate Instruction*, apply to The Registrar, Duke University, Durham, N. C. 27706

For *Bulletin of The School of Engineering*, apply to The Registrar, Duke University, Durham, N. C. 27706

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Cover: Shields representing the various disciplines embraced by the liberal arts are carved above entrances to academic buildings of the University.

formation for Prospective Students

June 1969

BULLETIN OF DUKE UNIVERSITY

Volume 41 June 1969 Number 8–A

Published by Duke University monthly except in July, August, September, and December. Entered as second-class matter March 25, 1929, at the Post Office of Durham, North Carolina, under the Act of August 24, 1912.

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†Through 1-15-69; William G. Anlyan, M.D. elected Associate Provost. Dr. Barnes Woodhall appointed Chancellor pro-tem.

Undergraduate Admissions

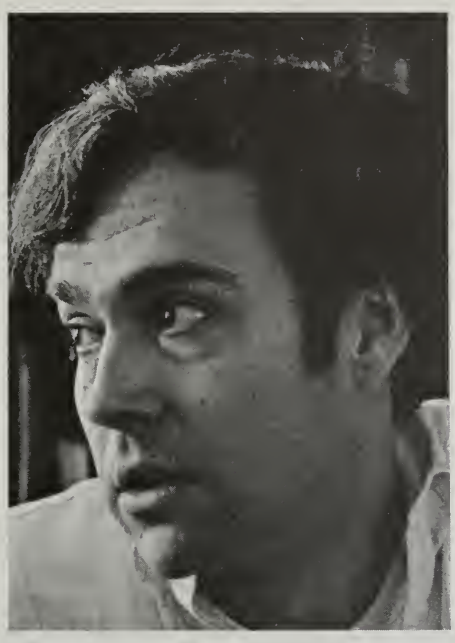
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Why Think of College at All? Why Duke?

by Reynolds Price

Reynolds Price, Duke alumnus in the Class of 1955, novelist and writer of short stories, is an associate professor of English. In 1962 his novel *A Long and Happy Life* won the William Faulkner Prize for a notable first work.

Reynolds Price



Why Think of College at All? Why Duke?

Why go on to college at all? Presumably, you're seventeen or eighteen years old. That means you have probably lived one-fourth of your life by now and are no longer pleading "Youth!" as an excuse for your errors or thoughtlessness. (You know who I mean—"I'm only eighteen; how was I supposed to know?" The answer is "Through your eyes and head; you've had twenty-five percent of your life to learn in.") So by now, you'll have asked yourself that question in many forms—why go to college?

The simplest answer—now, in America—is "Why not? My friends are going. It's the next thing to do. My parents want it. Future employers demand it. It's a temporary detour from Army, the Hard World, Jobs, Marriage (though I've heard college doubles as a marriage-broker). What else would I do?"—For one thing, you might do what most of the human race has done and still does long before age eighteen—leave home and begin your free life, for which you must work.

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But of course there are far more serious answers. "I don't know enough yet—about the world, myself, others, least of all God—to want to begin my free life just now. If I tried, I'd have slim hopes of being free. I'd be bound and trapped by all I didn't know and, worst of all, by what I didn't know I didn't know. These four years of college are the time my society—like it or not, it's stronger than me and has the power to paralyze me in misery—has agreed to allow me for final preparations."

—Preparations for what? That's the next question and it goes down deeply. —For this "free life" I've mentioned, in the "real world"? You can't prophesy the life you're going to have, the world you'll meet; so how can you prepare for a succession of mysteries? —You have to guess at what those mysteries will be; and unless you're psychic, you can only begin to guess at the future by examining and understanding the past—your own, your race's, the past of the universe. And you have to guess at who will accompany you through your life—your parents partway, your wife or husband, children, friends, colleagues, your unavoidable enemies. The only prior certainties are these—that you'll *have* your life (some sort of life) till the moment you die and that you yourself will be your one permanent inescapable companion through every moment until the last.

So I would suggest that the simplest, truest answer to "Why go to college?" is implied in the need to meet and deal with those two certainties. You go to college to continue your education—for the last years of your life which are likely to be free of heavy social burdens and therefore available to you as time in which to concentrate. You'll say I'm talking circles—what is "education"?



You know its etymology, from Latin—*e-ducere*, to lead out or draw out. But draw what out of what? —To draw yourself out of your physical and emotional childhood. To draw your own innate and acquired qualities of character and skill out of their confining fat of natural ignorance, laziness, self-destruction. To draw out of yourself, teachers, friends and books the strengths you will need to live your life.

"Why bother?" you might say—"Most human beings have lived their lives with the barest minimum of formal education; most in fact with none at all."

I'd say, "Right, and most lives have been miserable. You're going to have your life—unless you choose to stop it—so you'd better discover as soon as possible *how* to have it, what matters in it." Lord Salisbury, Victoria's prime minister, once said when asked if he didn't think it mattered greatly for someone to do thus and so—"Nothing matters *very* much and few things matter at all." The remark may shock you, as it still does me every time I hear it; but it says nothing new. It seems at first to share the



weariness of Marcus Aurelius, the easy disillusionment of *Ecclesiastes*, the *Rubaiyat* and a billion adolescent diaries—Vanity of vanities, all is vanity. But that's not what Salisbury said (though he might, having presided for years over the largest empire in the history of the world)—not "*All* is vanity" or "Nothing matters" but "Nothing matters very much and few things matter at all."

What few things? I'd suggest that another bout of serious education is your last chance of finding out some of those things at least (and the ways to pursue them or live in their presence or absence if need be) before having to discover them all by the primeval and appallingly wasteful method of surprise and experience—life-between-the-eyes, with no fair warning and no advance knowledge of preventives or cures.

One of the things which will matter greatly, in your life and the lives of those close to you, is the work you choose to do. There's a lot of sneering and wincing lately at what's called the Puritan or Protestant Work Ethic; the ethic which, we're told, "made America great"—"Work for the night is coming . . . The Devil finds work for idle hands . . . A man's work is his truest worship." In short, many young people now deride an ethic





which has come to see virtue in *busy-ness*, whatever the nature or aim of the business, war or peace, good or bad. And no man of good sense would try to deny that the old Judeo-Christian ethic has degenerated on many sides into the cynical, near-hysterical pursuit of money and power-for-the-sake-of-power. But to recognize decay in a concept is not to demand its abandonment, rather its repair—provided that the decay is not inherent in the concept itself, in some innate falsity or in its inappropriateness to present conditions. *Work* in the sense of daily effort at a job—work as labor—may be rapidly doomed for increasing numbers of men by automation, prosperity, governmental support. The fact remains however that we have our lives—say seventy years—and we have to get through them, some 25,690 days at twenty-four hours each, two-thirds of them conscious. And until medicine has developed far more sophisticated tranquilizers or methods of genetic manipulation or mind-control, we're going to have to find our own ways to pass, to endure, that time and the disciplines and techniques for passing it, if not usefully and happily at least harmlessly.

Until that day of universal leisure and the understanding of the uses of leisure, I'd suggest that your work can be your most reliable life-companion, your safest hope of freeing yourself. —Free-

ing yourself from what? First, from physical want—hunger, cold, disease. Then from other human beings, especially those you love. This is not to claim that you'd wish to abandon the duties of love toward your family and friends; it is to claim that only through your own early discovery of, cultivation of, some absorbing work—laying roads, exploring space, writing novels—will you have much chance to free yourself, not from love but from the crippling emotional dependence upon other human beings which poisons anyone who has nothing in his life upon which he can rely which promises to be more permanent than other people. A craft, a skill can—given good health—last you all your life. Very few friends, wives, sons, daughters can prove as enduring however much they wish to. Then last, work can free you from yourself; for your *self* will remain true longest of all. All your weaknesses will court you to your grave; and only a daily commitment to some work which will demand from you full exercise of your strongest self can free you from them.

Then I'd suggest that a full definition of *education*—for now at least—might go like this: Education is the process by which a man or woman discovers, as early as possible in his brief life, the nature and duties of the work which he desires and needs and is fitted to do and the means of doing it.

Am I speaking of *formal* education?—the sixteen to nineteen years of school and college you're likely to experience?—or, more broadly, of a private search and process conducted on your own? I mean *formal* education, conducted within an academic community, established however humanly and therefore imperfectly, maddeningly. Why so limiting? —Because not one man in fifty thousand has the resources of curiosity, concentration, self-control and stamina to lead himself, unassisted and unregulated, through the disciplines of even a minimal education.

If I assume that you've accompanied me this far, then I can hope that you won't think I'm producing—with a sly *Ah-ha*!—a rabbit from my hat when I say that your next question might be, "Why think of Duke?" Presumably you've already asked the question or you wouldn't be reading this pamphlet.

Leaving aside personal loyalties (that I was an undergraduate at Duke, that I returned to Duke to teach and have found it a good place for writing fiction), my first and also final answer would be—because Duke is almost certainly as good a university as you are a man or woman. By which I mean that, provided any special interest of yours is dealt with at Duke, its major resources

will match your needs and abilities and will test your character and stamina, your determination to do serious work, to have a free and serious life.

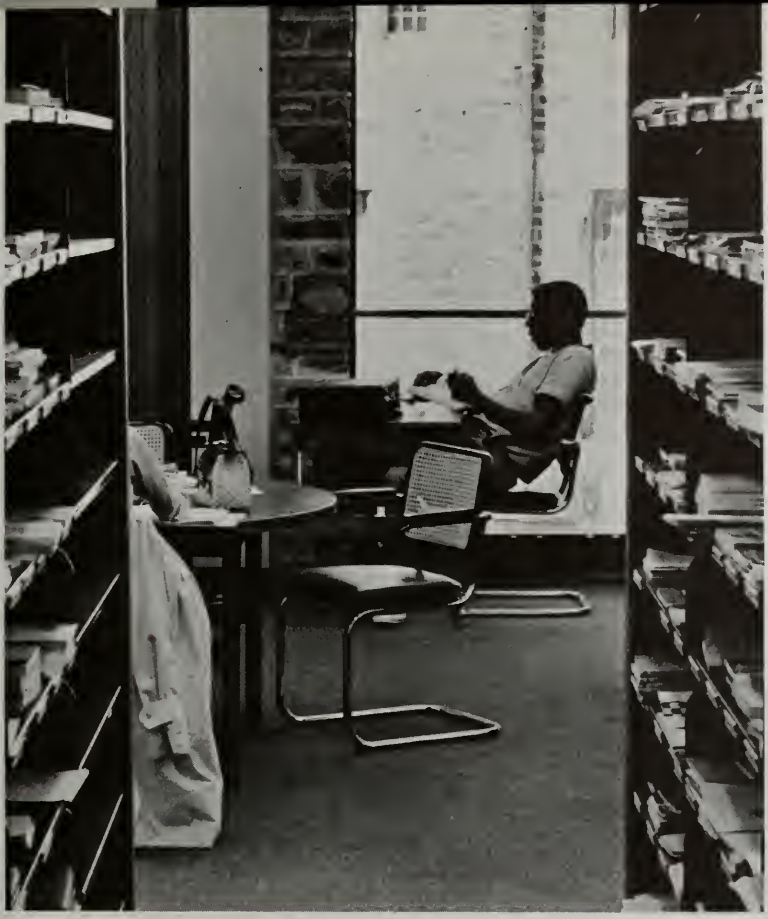
—Not *every* resource now—apart from equipment, Duke consists of human beings (a loose collection of eight thousand students, faculty, administrators, staff); and you would be faced often with the fact that such an institution is subject at every turn to failures in the competence and character of each member. But where will you not be faced with that fact, that particular frustration?—in a smaller college? A smaller college consists of fewer people—that much is sure, if that's a comfort; most universities consist of tens of thousands more—but a smaller college also contains fewer of the resources in which Duke is well-stocked.

I'd suggest that the major resources of Duke—and your heaviest reasons for considering it—are these (and in this debatable order):

—a library whose two million books and four million manuscripts place it among the first eighteen university libraries in America.

—a curriculum completely revised in the past year to provide great fluidity of individual speed, intensity and independence within the bounds of responsible good sense.





—a total faculty of more than nine hundred, some five hundred of whom work with undergraduate students (a faculty-student ratio then of one to ten), a number of whom are distinguished scholars and some of whom are well-known on campus (ask any student) for the excellence of their classroom efforts and their concern with serious student interests.

—an undergraduate student body of about five thousand which contains an unusually high and growing proportion of excellently informed men and women engaged in their own work.

—then, the place. Not so much the famous neo-Gothic and Georgian quads as the huge green setting. The campus is set in some eight thousand acres of thick pine forest, granite bluffs, creeks, rivers. Walk twenty minutes—or drive for five—and you're deep in woods. Clear air, clean light, silence, animals, arrowheads. Unprettified wilderness, available to you. If that doesn't seem a "major resource" for your education, you'd probably be happier at Columbia or N.Y.U. under blankets of soot.



There are many other assets—and liabilities—but my suggestion after more than fifteen years of exposure to the place, man and boy, is that if you are an American of undergraduate age who seriously wants to continue an education (as broadly defined above), who finds your special subject offered at Duke and is prepared to work within the general frame of a liberal curriculum at a private institution (which would imply that you have few delusions about the paradisical nature of institutions or the ease of changing them), then you won't find ten more possible places—more resourceful and better located for work. Make it five. Or eight—that's only a game. The real question now, I'd think, is about you.

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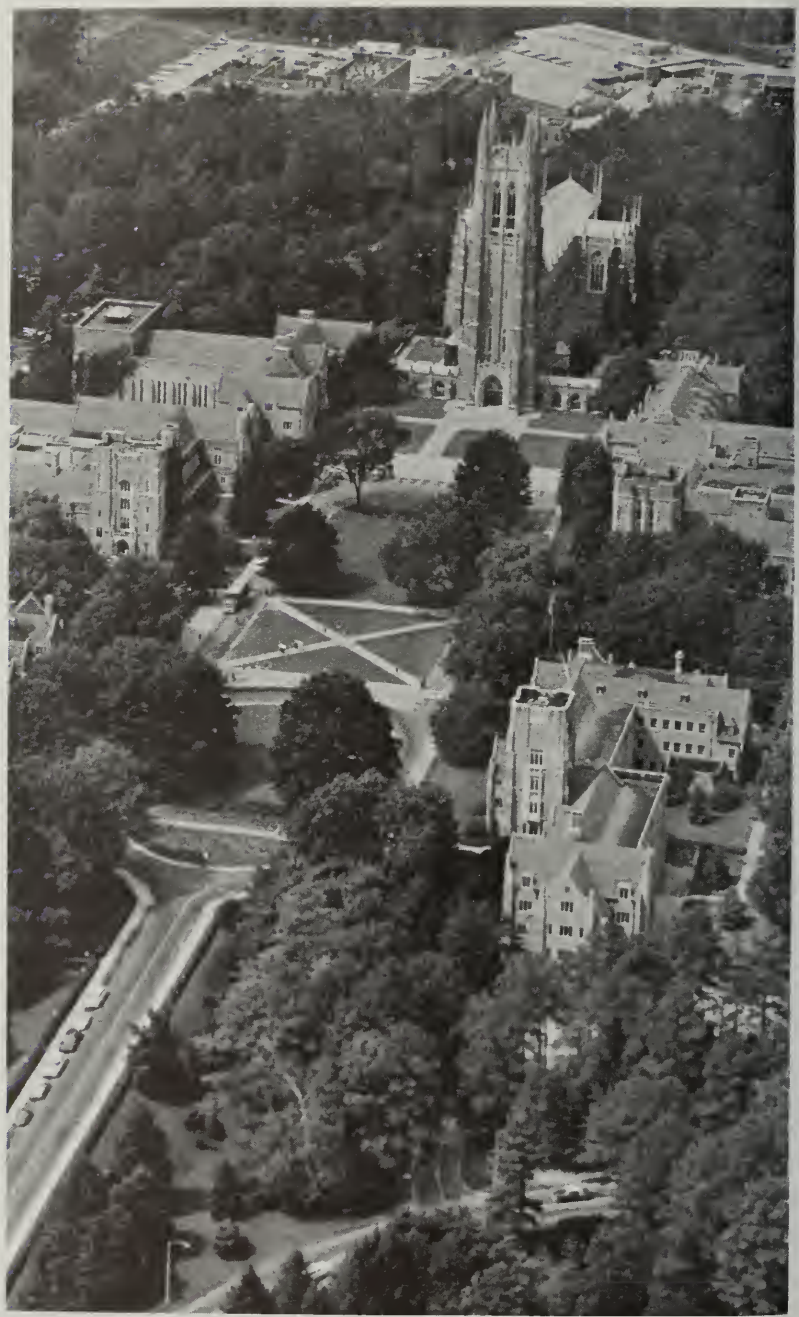
The University

The story of Duke University began nearly a century and a quarter ago with the founding of the Union Institute in Randolph County. "Dedicated to the erasing of ignorance and error and to the education of responsible citizens," the Institute grew slowly for two decades. In 1859 it was formally organized as Trinity College, which laid the solid foundations for the future. When the college moved to the growing city of Durham in 1892, it found increased support from the church and from individuals who were dedicated to the aims of liberal education. During the next three decades, Trinity College drew to its faculty men of imagination, courage, and intellectual achievement who, in an atmosphere of academic freedom, created a notable liberal arts college.

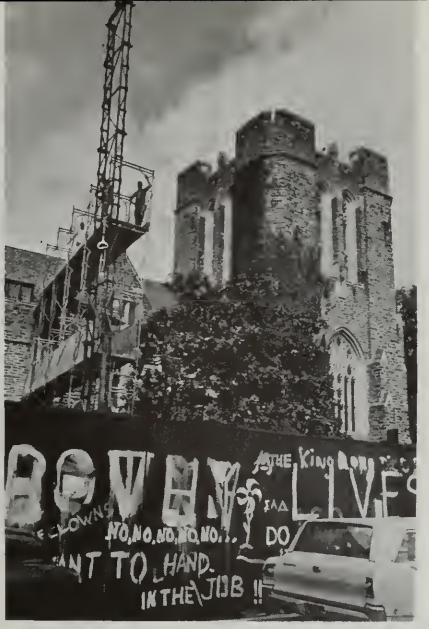
The transition from college to university dates from James B. Duke's Indenture of Trust in 1924, through which Duke University came into being. Trinity College was joined by three other undergraduate colleges, The Woman's College in 1925, The School of Engineering in 1939, and The School of Nursing in 1953. Through the years, graduate and professional schools in Arts and Sciences, Divinity, Forestry, Law, Business Administration, and Medicine were established. In hardly more than a generation, Duke University has attained a position of educational leadership and importance, both regionally and nationally, and has nearly 43,000 active alumni from all fifty states and many foreign countries.

Setting

Duke University is in Durham, North Carolina, which is centrally located in the state, roughly midway between the majestic scenery of the Blue Ridge and Great Smoky Mountains and the historic Atlantic Coast.







A city of nearly 100,000, it is one of the growing communities of the Research Triangle of the Piedmont section of North Carolina. Drawing on the resources of several major universities in Durham, Raleigh, and Chapel Hill, expansion in industry, research, and education is encouraged and facilitated by the personnel of the Research Triangle Foundation.

In walking distance from downtown Durham is the section of Duke known as East Campus. Here are the Georgian styled residence halls, the Woman's College Library, Baldwin Auditorium, the Art Museum, and classroom buildings. A mile away are the Gothic quadrangles known as West Campus, which include the Duke Chapel, the administration buildings, the main library, residence halls, laboratories, and most classrooms. Classes are coeducational and are held on both East and West. The University provides free bus transportation to all sections of the campus.

Resources for Study

Spring of 1968 brought the opening of an addition to the William R. Perkins Library which doubled the space available for books and students. In this main library, in the Woman's College Library, and in individual departmental libraries, there are facilities for research, reference, and relaxed reading. Through a reciprocal agreement, the libraries of the University of North Carolina and of North Carolina State University are also open to Duke students.



The University has excellent laboratory equipment to enhance faculty and student research. Besides the two Van de Graaff accelerators, the campus houses the Regional Nuclear Structure Laboratory, one of the most modern and advanced nuclear facilities available. Duke also has a phytotron, one of two in the nation, which allows duplication of environmental conditions anywhere in the world. The hyperbaric unit at the Duke University Medical Center is the site for experiments in the effects of varying atmospheric pressures and for delicate surgical procedures. In addition, there are modern sensitive testing devices for certain phases of engineering, digital computers for complicated mathematical formulae, microphotographic apparatus for study in cell growth and decay, and modern language laboratories.

Duke also offers a graduate program in the marine sciences and maintains a training and research facility at Beaufort, North Carolina. The University's well-equipped 118-foot vessel *Eastward* is the first ship in the United States designed specifically for research in oceanography.

Due to the resources and facilities available, Duke has established centers for research in areas such as the study of Aging and Human Development, Southern Studies in the Social Sciences and Humanities, the World Rule of Law Research Center, and the Center of Commonwealth Studies.



Installing a Van de Graaff accleration in the new Regional Nuclear Structure Laboratory.

Right: One of the hyperbaric chambers.



Below: The Phytotron.



The Sarah P. Duke Gardens are fifteen acres of beautiful living laboratories in the heart of the campus. Administered by the Botany Department, the gardens are used to show the types of plants indigenous to the area. But primarily the Rose Garden, the Azalea Court, the Terraces, the Rock Garden, and the Grass and Sky Garden are exquisite places of beauty for visitors and members of the Duke Community.

In a recently completed art museum, Duke University houses the Brummer Collection, a treasure of sculpture and decorative arts of the Middle Ages and the Renaissance. It also exhibits various collections on loan from individuals and museums around the world.



Academic Life

Curriculum for Arts and Sciences

Majors

Majors leading to a bachelor's degree are offered in the following areas: accounting, anthropology, art, botany, business administration, chemistry, economics, elementary education, English, French, geology, German, Greek, physical education (women only), history, Latin, mathematics, music, philosophy, physics, political science, psychology, religion, Russian, science education, sociology, Spanish, and zoology.

In addition, interdepartmental concentrations may be arranged either at the instigation of the departments or the individual student. For example, a student may now major in Medieval and Renaissance Studies, or he may develop a personal program in such interdisciplinary areas as biology, biomathematics, microbiology, molecular biology, and oceanography, with the approval of the directors of undergraduate study in the departments concerned.

Program I

There is no set curriculum which each Duke student must follow. He plans his own course of study, with the approval of his adviser, according to specified guidelines rather than specific course requirements.

To graduate, a student must pass thirty-two semester-courses, normally taking four courses per semester. He must also demonstrate skills in both English composition and in a foreign language; in many cases these skills will have been developed in secondary school prior to coming to Duke.

Proficiency may be demonstrated by performance on achievement tests, with the minimum score for exemption in these areas at the discretion of individual departments. Any student not proficient will complete a one semester-course in English composition or one or two years of a foreign language.

A student chooses studies in each of three main divisions: natural sciences and mathematics, humanities, and social sciences. In one division he will find a major; in a second, he will study at least four semester-courses, two of which are beyond the introductory level; and in the third, he will study at least two semester-courses. These are merely area distributional requirements; the specific courses a student takes are chosen by him according to his own talents and goals, with the approval of his adviser.







It is important for a student to establish his major as soon as possible, but certainly prior to the junior year. Departments set their own requirements for majors, but no department can require more than eight semester-courses at an advanced level for a student seeking the B.A. degree, and no more than ten, for one seeking a B.S. degree.

As a student selects his studies, he must also select various types of learning experiences. Each student is expected to have in his freshman and sophomore years some experience in a seminar, preceptorial, tutorial, or discussion group. Enrollments in these classes range from one to a maximum of fifteen students. In all these groups, the individual may engage in discussion, develop skills, refine judgment, and have ideas challenged.

With experience in introductory seminars or other discussion groups in his first two years, a student should have developed the skill, assurance, and mental agility to contribute to advanced seminars in his junior or senior years, or to undertake independent study. Duke strongly encourages independent study for all students, the limits of which are determined by the student, his adviser, and the professor concerned. Emphasizing the personal selection of courses and personal guidance in studies, the curriculum at Duke ensures that no student can idly pass through the University on the back row, an anonymous and shady figure appearing only in a grade book.



The new 7.3 million dollar Paul M. Gross Chemistry Building.

Program II

Although most students will need the basic structure supplied by Program I, the student with unusual interests or talents has the opportunity in Program II to plan his own curriculum free of all requirements under Program I, with the assistance and approval of the faculty in his area of concentration.

In most instances a student will apply to a particular department in which he wishes to major for entry into Program II. Occasionally, he will plan an interdepartmental program that will require the approval of several departments, although the student's principal adviser remains within one department.

The departments are granted a large degree of autonomy; they set their own standards for admission and accept those whom they feel are most suited to the program. This offers advantages to some students who would have difficulties achieving their goals even with the few restrictions of Program I. For instance, a student in Program II may more easily spend a full year in independent study for which he might receive credit for eight semester-courses. In Program II the student and his adviser have the opportunity to look at the resources of the University and those outside it, to evaluate the courses and independent work open to the student, and to allow the student the exciting possibility of shaping his own educational program.

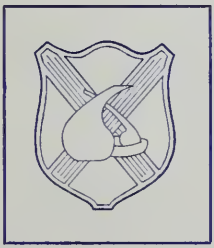
Permission to enter Program II may be granted after formal admission to the University. Students wishing detailed information about Program II may consult the *Academic Guide for Freshmen.*

Advising

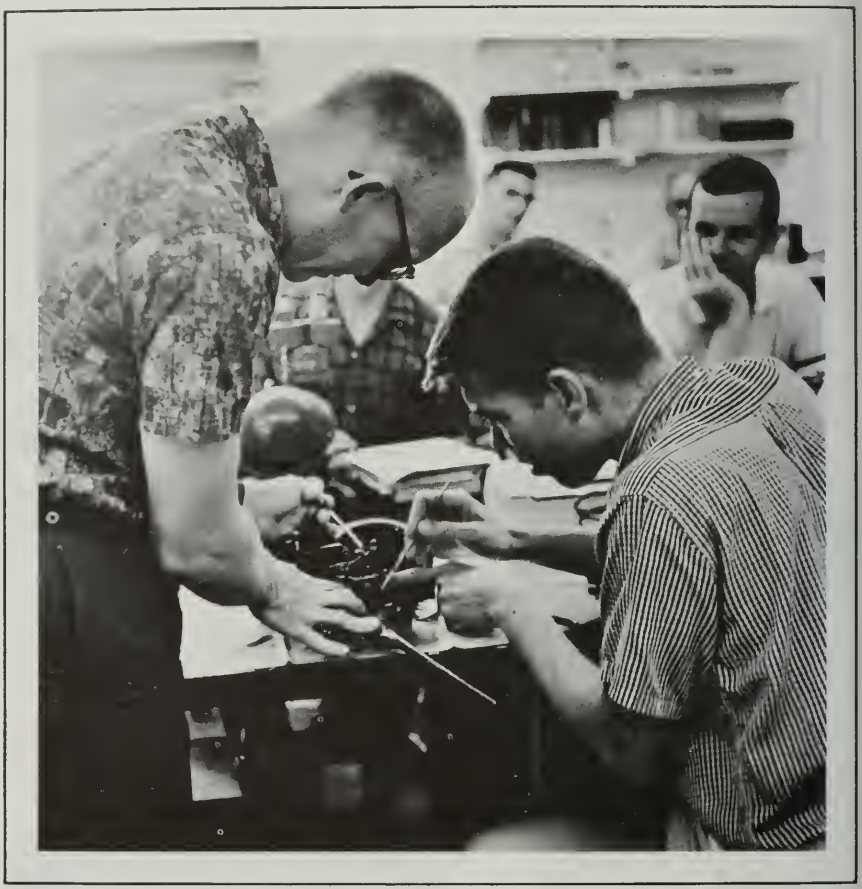
All freshmen will be assigned to faculty fellows who will assist them in planning their curriculums. The fellows will be associated with freshmen living groups to provide year-long guidance and information to students about courses, vocational possibilities, and professional aids.

Students who have not declared their majors are assigned to a faculty adviser to help them plan courses of study that take into account their abilities, needs, and aspirations. Upon declaring a major, a student is assigned a faculty adviser from the department. In addition, qualified staff members who serve as housemasters and house counselors assist in offering academic and social advising. Students may be further assisted by departmental directors of undergraduate studies, supervisors of freshmen instruction, and the academic deans of the colleges.









Pre-Professional Programs

Duke offers programs for those intending to teach in elementary school and high school, with special training for those intending to teach art and music. Advising is offered to students seeking admission to medical and dental schools, law schools, theological schools, and graduate schools. Instead of standardized programs, faculty advisers assist students in planning a curriculum that not only provides appropriate background for further study but also takes into account each student's abilities and interests.

Special professional combination courses are offered to rising seniors in Trinity College and The Woman's College who wish to enter a professional school of the University. Students may, following their junior year, enter the School of Forestry, the School of Law, or the School of Medicine, to earn the degrees of Bachelor of Arts or Science in combination with the Master of Forestry, the Bachelor of Law, or the Doctor of

Medicine degrees. Such plans, however, depend upon the student's admission to the desired professional school; a student so admitted registers as an undergraduate senior and as a first-year professional school student. Details on these programs are available from the School of Forestry, the School of Law, and the School of Medicine.

Study Abroad

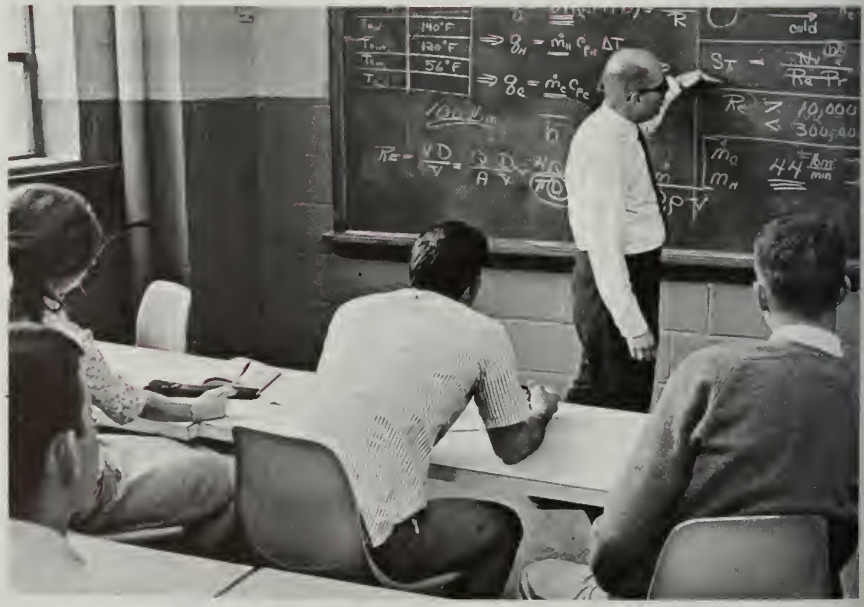
Although the University sponsors no Junior Year Abroad program, Duke students wishing to spend a year of college study in a foreign country may do so. Students contemplating such a program may consult an adviser in various departments for assistance in arranging a course of study and obtaining formal academic permissions. A leave of absence from the University is arranged for students who qualify.

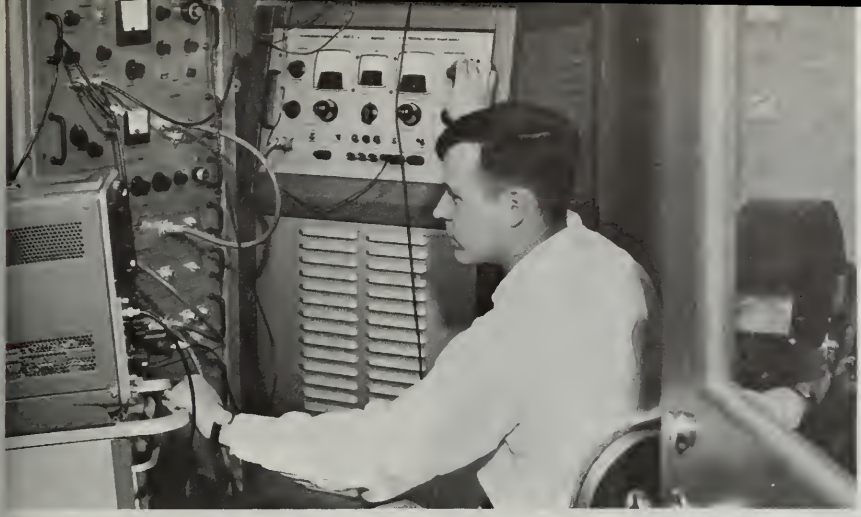









140°F
120°F
54°F
cold
44 km/hr



Curriculum for Engineering

The School of Engineering offers four-year programs to both men and women leading to the Bachelor of Science in Engineering (B.S.E.) degree. Students may major in civil, electrical, mechanical, or biomedical engineering; or they elect interdisciplinary fields such as energy conversion, systems and controls, engineering mechanics, and materials.

Course Requirements

English: satisfied by completion of the freshman course.

Mathematics: Introductory Calculus, Intermediate Calculus, Introduction to Digital Computation, and Applied Mathematical Analysis I.

Natural Science: General Inorganic Chemistry and General Physics.

Social Science and History: course work chosen from freshman or sophomore anthropology, economics, history, political science, psychology, or sociology.

Humanities: Two courses in one of the following—Representative British or American Writers; Greek or Latin Literature in Translation; Knowledge, Fact, or Value; History of Philosophy; Introduction to Art History; Introduction to Music Literature; The English Bible or other religion courses; and foreign language courses above the sophomore level not in English translation.

Electives in Social Science, History, and Humanities: a minimum of two courses in addition to the above requirements.

Physical Education: Completion of freshman and sophomore courses.

Departmental or Major Specifications: met by completion of course work specified by the student's major department: a minimum of 16 s.h. in engineering courses of which 6 s.h. are in design-oriented studies.

Engineering Core Course: normal 32 s.h. in engineering fundamentals.

The engineering curriculum is under development and is, therefore, subject to change. Students should accept admission with this understanding.







Curriculum for Nursing

The Nursing Program is designed not only to create professional competence but also to develop a sensitivity to the needs of man in his environment. Upon successful completion of the course of study, the candidate is awarded the bachelor's degree in Nursing.

Studies in the freshman and sophomore years are devoted primarily to the liberal arts and basic sciences; during these years, cocurricular activities are provided to introduce the student to nursing. The focus of the junior and senior years is the nursing major.

Course Requirements

The following standard course requirements are included as lower division course work.

Natural Science	2 courses
English	1 course
Humanities	2 courses
Social Science (Sociology or Anthropology and Psychology)	3 courses
Basis Statistics	1 course
Concepts of Natural Sciences Fundamental to Normal Functioning of Man*	2 courses
Physical Education	.....
	11 courses

*This is an integrated natural science course (including anatomy, physiology, biochemistry, and microbiology) in a two-semester sequence.

The remaining five to nine lower division courses are selected by the student, with assistance from her academic adviser, in accordance with her goals and interests.

The nursing curriculum is under development and is, therefore, subject to change. Students should accept admission with this understanding.



Physical Education

All undergraduate students of Duke University must engage in some type of physical activity for four semesters. This program is designed to give students an appreciation of the value of activity for general physical well being, skill in one or more activities which can be enjoyed as recreation during and after college, and a well-coordinated body. For men this requirement may be satisfied by four semesters of courses in physical education. It may also be met through an approved program of personal physical fitness, which may include participation in intramural sports.

The program of the Health and Physical Education Department of The Woman's College begins with individual conferences following the testing





program of Freshman Week. All women are assigned to special kinds of classwork as needed, such as swimming, posture, fundamentals of movement, rhythm, or sports. During the four semesters of required physical education, women elect their courses from activities including individual, dual, and team sports, aquatics, conditioning exercises, and several types of dance.

In order to maintain certain hygienic standards of physical education and intramural athletics, the University has made available for all students the necessary uniforms, facilities, and laundry services.

Military Science

Naval Reserve Officers Training Corps

There are two basic programs in the Naval ROTC through which students can qualify for Naval commissions upon graduation: one, the Regular NROTC program, provides a maximum of four years in the University largely at government expense, followed by a commission in the regular Navy or Marine Corps; the other, the Contract program, leads to a commission in the Naval Reserve or the U.S. Marine Corps Reserve.

The Regular Student. Appointments are made on the basis of an annual nationwide test and selection procedure. Students selected are appointed Midshipmen, USNR, and receive for four years tuition, fees, and textbooks at government expense plus subsistence and summer active duty pay which amounts to approximately $750 per year. The regular

midshipman may take any course leading to a baccalaureate or a higher degree with certain exceptions, e.g., premedicine and medicine, pretheological and theological, and music and art. He participates in two summer training programs aboard ship and receives aviation and amphibious indoctrination at naval shore stations during one summer. Upon graduation he receives a commission as Ensign in the Regular Navy, or Second Lieutenant in the Regular Marine Corps. The minimum period of active commissioned service is four years for regular officers.

The Contract Student. The contract student is selected from freshmen regularly enrolled in Duke University who desire to qualify for a commission in the Naval or Marine Corps Reserve while pursuing their normal courses of study. He has the status of a civilian who has entered into a mutual contract with the Navy and is not eligible for the benefits and retainer pay received by regular midshipmen. He is paid a subsistence allowance during his last two years in the NROTC, however, amounting currently to fifty dollars a month. He goes aboard ship for two summer training programs, normally between his junior and senior years. Upon graduation, he is commissioned in the Naval or Marine Corps Reserve and reports for active duty. The minimum period of service for both the Navy and the Marine Corps is three years.

Both Regular and Contract midshipmen are deferred from Selective Service by virtue of their commitment to serve on active duty after graduation. The Navy furnishes necessary uniforms and equipment.

Air Force Reserve Officers Training Corps

The unit functions as a regular department of instruction known as the Department of Aerospace Studies. It selects and trains students who possess the requisite character, intelligence, desire, and sense of duty to become Air Force officers.

For enrollment in the Basic Course (freshman and sophomore years), the student must be a male citizen of the United States, be physically qualified under standards prescribed by the Air Force, and be accepted by the institution as a regularly enrolled student and must meet other stated requirements.

For enrollment in the Advanced Course, the student must have successfully completed either the Basic Course or the six weeks Field Training Course, or have had at least one year of honorable service in the Armed Forces of the United States; must execute a written agreement with the government to complete the Advanced Course; must be sworn into the Enlisted Reserve; and must agree to accept a commission in the United States Air Force Reserve upon graduation.

Those selected for the Advanced Course are furnished uniforms, texts, and training equipment, and are paid approximately $900 for the two years of the Advanced Course. Each advanced student will attend a summer training unit, at government expense, normally between his junior and senior year.





Academic Regulations

Class Attendance

Regular and punctual attendance in class work is expected of all students. Requirements for the continuation in college and for graduation emphasize the desirability of the student's assuming responsibility for class attendance.

Grading

Passing. Passing grades are *A*, exceptional; *B*, superior; *C*, average; and and *D*, low pass. A passing grade may be modified by a plus or a minus.

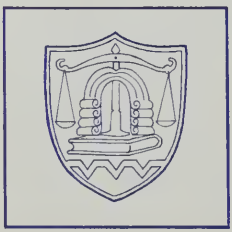
Failing. A grade of *F* indicates that the student has failed the course and that in order to receive credit for it he must reregister for the course and repeat the work in class.

Pass/Fail Option. This option is available to juniors and seniors in one course outside their major field each semester. Students complete all the work of the course, but receive either a pass or fail in lieu of a standard grade.

Advanced Placement

In recognition of the superior preparation of some entering students, the colleges arrange course placement on the basis of good results on either the Advanced Placement Examinations of the College Entrance Examination Board, Achievement Tests of the CEEB, or on tests given during Orientation Week by the colleges. Only the Advanced Placement Examinations may lead either to placement on the sophomore level or higher in botany, chemistry, English, French, German, history, Latin, mathematics, physics, Spanish, and zoology or to credit toward graduation for the course or courses omitted.

Although acceptance of a score is at the discretion of the department involved, students presenting scores of 4 or 5 on an Advanced Placement Examination will ordinarily receive credit upon matriculation. Generally, a score of 3 will be considered for course credit. In the class of 1972, there were 236 students who received credit on the basis of the Advanced Placement Examinations.



Student Life

A student at Duke is part of an academic community which counts diversity as one of its greatest assets. With representatives from the fifty states and many foreign countries, the student body is a cross section of geographic, social, economic, and religious backgrounds. Situated in the Southeast, the University draws more than half of its students from outside the region. Diversity alone does not produce a stimulating atmosphere. But it does provide the basis for an expanding perspective among students whose common bonds are a desire to develop personal talents and abilities to the utmost and a dedication to academic excellence.

Living Accommodations

There are three types of living groups for men on the Duke campus: all-freshman houses, independent cross-section houses, and fraternity sections. In the freshman houses there are housemasters; in each cross-section house there is a resident fellow. They counsel students in both social and academic matters. A freshman may request accommodation in either a cross-section house or an all-freshman house; however, assignments are made in the order that the requests are received. After the freshman year, all fraternity men may live in a fraternity section. Men who do not affiliate with a social fraternity may choose to live in a cross-section house. Dining facilities for men are available in cafeterias throughout the campus on a pay-as-you-go basis.

There is representation of all four classes in twelve women's residence houses, with about thirty places reserved for freshman women in each. House counselors, members of the dean's staff, are in residence as adult advisers. After their first semester women may apply for residency in a living-learning corridor. In the French, German, and Spanish Corridors,



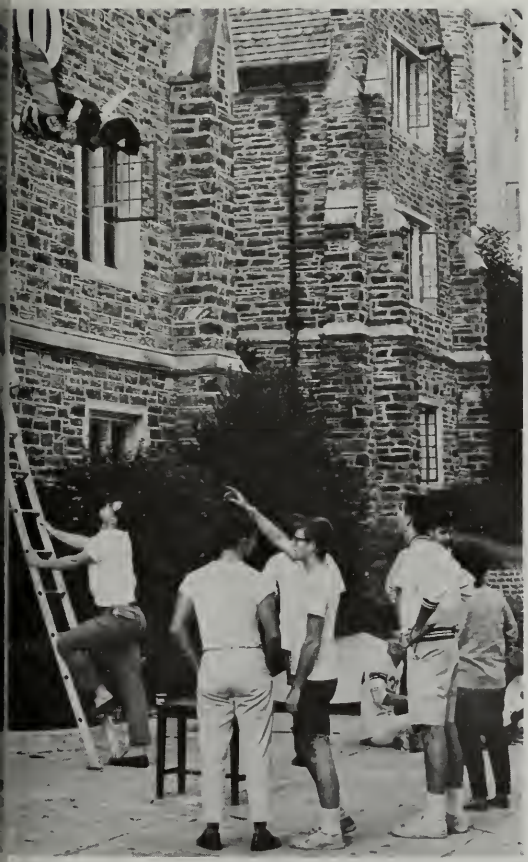
A newer men's dorm blends Gothic and contemporary architecture.

qualified upperclassmen speak only the language of their group. A native of the country serves each group as a resident faculty associate. Other living-learning corridors include Science, Contemporary Arts, Contemporary Morality, the Society of the Seventies, the Role of the University, and Harambee (a potpourri of diverse intellectual interests). Although there are social sororities, there are no separate chapter houses or sections. Dining facilities are available in cafeterias throughout the campus; however, women pay a fixed board fee.

The living arrangments for both men and women are considered to be much more than just dormitories. House government committees and faculty associates offer the undergraduate a range of social and intellectual opportunities. Through the living groups, special courses for credit have been arranged by students and a professor. Past courses have included Contemporary Rock Music, Recent American Drama, and Interaction of Religious & Political Ideology in the Contemporary Middle East.



Above: Coeds rehearse skits for the Homecoming Show.



Left: Homecoming displays require imagination and ingenuity.

Student Activities

Religious Life

Although religious activity at Duke is voluntary and personal, it is an important force in university life. *Eruditio et Religio,* the University motto, proclaims the essential union of knowledge and religion. The Duke Chapel stands as an inspiring symbol of religion in the well-balanced life. Although Duke is historically related to the Methodist Church, it encourages students of all faiths to develop their spiritual lives.

In the interdenominational Service of Worship on Sunday morning, two hundred students participate by singing in the choir; at least one hundred other students aid in special ways, as ushers, collectors, and assistants in the communion services. Additional opportunities for the enrichment of the student's religious life are offered in organ and carillon recitals and choral concerts.





The University Religious Council, composed of students and faculty, promotes the interdenominational religious life in its many facets. The work of the Council and of the denominational program is under the supervision of the Chaplain to the University, who is also Director of Religious Life. Working with two associate directors of religious life and five denominational chaplains, he coordinates the religious program of the campus. Protestant, Roman Catholic, and Jewish students may meet in their respective groups, each having a denominational chaplain or adviser and several having denominational student centers.

The Dean of the Chapel is a key figure in the University's religious life. He serves as the officiating minister and participates in the planning of the University's religious program. Sermons are also delivered by distinguished theologians and speakers of national and international prominence.

Organizations

Approximately half of the undergraduate students belong to fraternities and sororities. Twenty fraternities and eleven sororities have chapters on campus. Freshman may affiliate during the second semester through deferred rushing.

Although each has its own student government association, the four undergraduate schools and colleges combine in the Associated Students of Duke University. Other channels for student leadership are the Pan-Hellenic and Interfraternity Councils, and the Independent House Association.

Opportunities for active service abound on the Duke campus and in the Durham community. Among these are tutorial programs for disadvantaged youngsters, internship possibilities in state and local governmental agencies, and work in the many health-related facilities of the area. The YWCA and YMCA serve as coordinating agencies in the planning of community projects and in the identification of areas of need and concern. Other service and honorary groups direct their attention to the particular needs of the University by acting as guides for visitors to the campus and by serving as ushers at special events.

An important aspect of life at Duke is the variety of "extras" on the college calendar—lectures, conferences, symposia. The constant procession of distinguished statesmen and scholars provides a broad range of choices for the University community. The Student Union plays a significant role in sponsoring these and other major attractions such as broadway shows, cinematic arts, and widely acclaimed performers from all areas of the arts. Through a variety of activities planned by the students, the Student Union adapts its broad program to the leisure interests of all students.







Competent musicians can find artistic groups which they may join: the symphony orchestra, the chamber orchestra, the concert band, the brass ensemble, the marching band, and the pep band. Those who enjoy singing will find numerous groups available to them. The Chapel Choir, composed of two hundred men and women, the Chancel Singers, a select group of sixty men and women, and the Woman's and the Men's Glee Clubs regularly give concerts. Touring groups such as the Glee Clubs and Concert Band schedule trips away from the campus. A smaller group of trained voices, the Madrigal Singers, emphasizes research for and performance of unusual ensemble music. The varied musical programs offered by these groups are supplemented by the Ciompi String



Quartet—musical artists in residence—the Chamber Arts Society, which brings to the campus the best chamber music ensembles from this country and abroad, and by the Duke Artists Series, which sponsors the appearance of the symphony orchestras, choral groups, ballets, and individual artists.

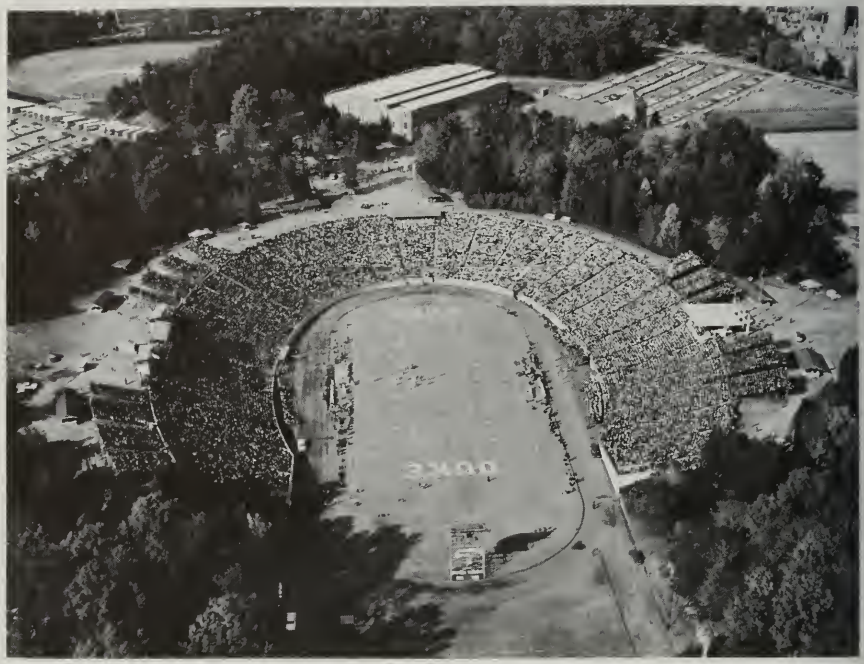
Students who enjoy speech, publications, and dramatics will find outlets for their talents. The Debate Council provides qualified students a chance to develop analytical and logical thinking in formal and informal discussions and debates. The varsity debate team has established an excellent record in intercollegiate debating, both regionally and nationally. The presence on the campus of WDBS, an active college radio station, provides experience in production, business management, engineering, and sales. The station broadcasts for more than eighteen hours a day and enlists a large audience on campus. Students interested in publications can gain experience on the staff of the *Chronicle*, the campus newspaper, the *Chanticleer*, the yearbook, or several periodicals.

Creative dramatic experience for all undergraduates is well supplied by the Duke Players and Hoof 'N' Horn. For many years the Players have put on productions of classical and modern plays. Using both arena style production in their own theatre and proscenium style in the University auditorium, the organization presents several major plays every year, plus a number of experimental plays and readings. Hoof 'N' Horn, a younger organization, directs its attention to an annual spring production of a musical comedy.

The professional and honorary organizations are numerous and include traditional Greek letter societies, such as Phi Beta Kappa, as well as national and local academic and leadership groups.







Recreational Activities

A voluntary intramural program which includes a dozen sports attracts many students. In a typical year more than half of the students forming fraternity, dormitory, and organizational teams participate in seventeen tournments and compete for more than fifty trophies.

Within the Woman's Recreation Association, various clubs including modern dance, water ballet, and gymnastics offer opportunities for each student to take part in the various extracurricular activities.

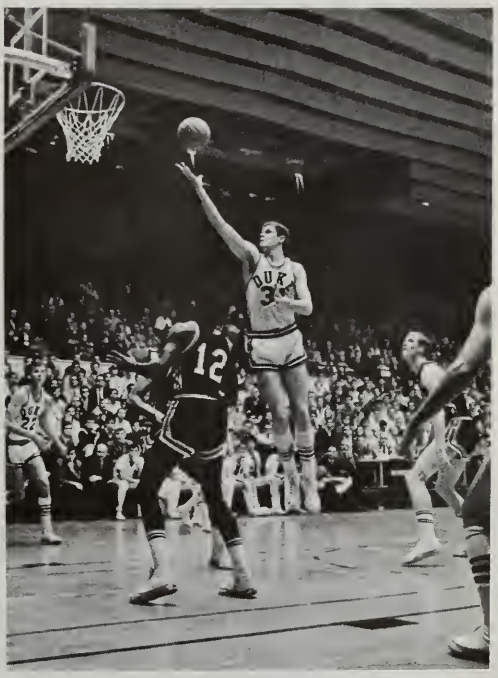
Students may borrow various sports equipment and may use all facilities when they are not otherwise scheduled. These include the golf course, tennis courts, swimming pool, handball courts, gym, archery range, and bowling lanes.

Numerous clubs dealing with fencing, scuba diving, sailing, cycling, and other sports are available to interested students.

Intercollegiate Athletics

Representative freshman and varsity teams participate in football, basketball, baseball, track, cross country, golf, soccer, lacrosse, swimming, tennis, fencing, and wrestling. Schedules are arranged to include both the schools in the Atlantic Coast Conference, of which the University is a member, and other interconference games with major universities and colleges. All students have the opportunity to participate in varsity sports.




DUKE
12



Services Available

Medical Care

The Student Health Program is closely related to the Teaching Hospital of the Duke University Medical Center. This arrangement provides an unusually comprehensive service, available at all times. The cost, for regularly enrolled students, is included in the general fee paid each semester.

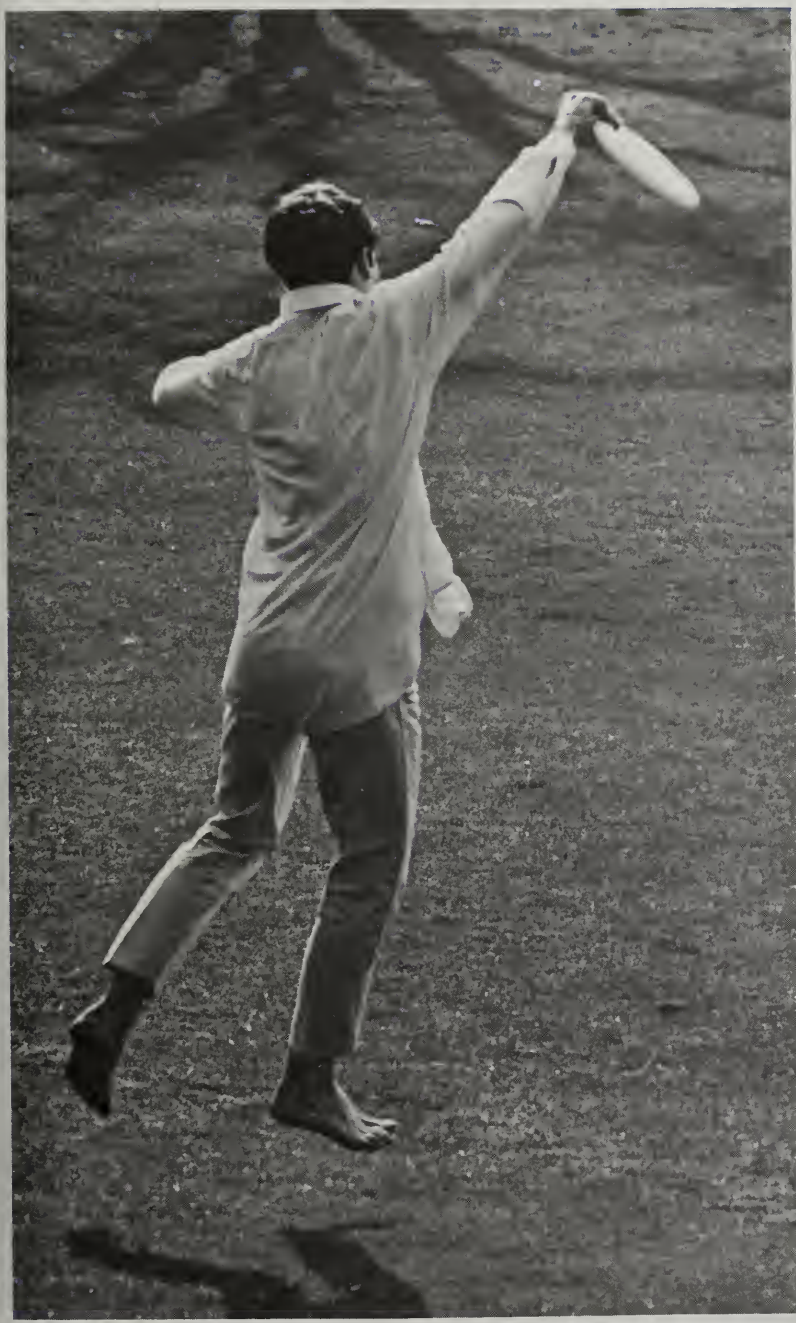
The service includes thirty days of hospitalization, medical and surgical care, drugs, X-ray work, and ward nursing. Special nursing and board while in the hospital are not included. Refraction of eyes, dental treatment, and treatment of all chronic and pre-existing conditions are not covered. Students pay for such items as braces, orthopaedic appliances, and blood used for transfusions.

If students have insurance providing hospitalization, surgical, or medical benefits, the benefits are applied to the cost of their medical care. Accidents or illness occurring during vacations or while off the campus, are not included in this service. A special commercial policy available only to regularly enrolled Duke students furnishes complementary protection, if desired.

Advisory consultation with a psychiatrist at no expense is available to students through referral either by the Student Health physicians or by



The Gothic Book Shop offers antiquaria and contemporary books.





the deans, but office visits for psychotherapeutic interviews cannot be included in this service.

A woman physician is in charge and a nurse is in constant attendance at the Woman's College Infirmary. Women students receive ambulant care at regular office hours and patients in this Infirmary can be transferred to the Duke Hospital at any hour of the day or night. Male students receive ambulant care at the Student Health Office in the hospital during regular office hours. The emergency service and the specialist consulting services of the Hospital and Medical School are always available.

Before admission to the University, students should be vaccinated against poliomyelitis and smallpox and men are advised to be actively immunized against tetanus. Students are given a medical examination on arrival at the University.

The Duke University Counseling Center

Through the counseling center, the University provides a professional counseling service designed to aid students in gaining a better understanding of themselves and the opportunities available to them. Counseling is available in the areas of career planning, educational opportunities, and personal and social adjustment.

The Center maintains files of educational and vocational information related to career planning, graduate educational programs and fellowships, and study aids.

National and University-wide testing programs are administered by the Center. A continuing program of research in the areas of counseling and testing is also carried on by the staff of the Center.

Appointments (Placement) Office

The Appointments (Placement) Office has the responsibility for aiding in the placement of Duke students in teaching positions and in business and commercial firms after graduation. The Director of the Appointments Office and other members of the office staff also do some career counseling. The Appointments Office maintains contact with about five thousand companies and schools, of which approximately 10 percent send representatives to the campus each year.





Conduct of Students

Duke University expects and will require of all its students continuing loyal cooperation in developing and maintaining high standards of scholarship and conduct.

The University wishes to emphasize its policy that all students are subject to the rules and regulations of the University as currently in effect or, from time to time, are put into effect by the appropriate authorities of the University.

Any student, in accepting admission, indicates his willingness to subscribe to and be governed by these rules and regulations and acknowledges the right of the University to take such disciplinary action, including suspension and/or expulsion, as may be deemed appropriate, for failure to abide by such rules and regulations or for conduct adjudged unsatisfactory or detrimental to the University.

Admission

In establishing his educational trust in 1924, Mr. Duke requested that "great care and discrimination be exercised in admitting as students only those whose previous record shows a character, determination, and application evincing a wholesome and real ambition for life." Within the spirit of this request the admissions officers seek those students whose records and aptitudes promise a successful college experience and "who evince a wholesome and real ambition for life."

New students are admitted for the academic year at the opening of school in the fall. An entering freshman class in the several colleges and schools is about 1200 students, with a distribution of approxiamtely 640 to Trinity College, 350 to The Woman's College, 145 to the School of Engineering, and 85 to the School of Nursing.

Since enrollment is limited, the Committee on Admissions selects those students who in its judgment are best qualified to benefit from the opportunities which the colleges offer. Selection is based not only upon academic grades and test scores but also upon recommendations of school officials and upon personal accomplishments.

Subject Requirements

Although there are no inflexible subject requirements, at least fifteen acceptable units of secondary school credit must be presented. Of these at least twelve must be in college preparatory subjects: English, foreign language, history and social studies, mathematics, and physical or biological sciences. Applicants for the School of Engineering are advised to present four units of mathematics and at least one unit in physics or chemistry.



The Office of Undergraduate Admissions.

Test Requirements

All freshman candidates are required to take the Scholastic Aptitude Test (SAT) and three Achievement Tests as administered by the College Entrance Examination Board. *One of the Achievement Tests, for all candidates, must be English Composition.* Candidates for Trinity College and The Woman's College are advised to take a foreign language Achievement Test if they have recently completed two or more years of foreign language study. Candidates for the School of Engineering must take an Achievement Test in mathematics.

Regular Admission

Procedures. In order to be considered for regular admission to Duke University the candidate must:

1. Apply for admission by filling out an application form obtained by writing to the Office of Undergraduate Admissions, 614 Campus Drive, Durham, North Carolina 27706. A non-refundable fee of fifteen dollars ($15.00) must accompany the application. Applications must be requested no later than January 15 and filed no later than February 1, but are normally filed during the fall of the senior year.
2. Give the secondary school record and recommendation and mid-year report form, provided in the packet of application materials, to the appropriate secondary school official for completion and submission.
3. See that the required test results are forwarded to Duke University. These tests must be taken no later than January of the senior year.

Notification. Decisions are mailed by April 15.

Early Decision Admission

For the well-qualified student who has definitely decided to enter Duke if accepted, the University will reserve a place by Early Decision on December 1 of the candidate's senior year in secondary school.

Procedures. In order to be considered for Early Decision admission the candidate must:

1. File an application for admission obtained by writing to the Office of Undergraduate Admissions, 614 Campus Drive, Durham, North Carolina 27706. A fifteen dollar ($15.00) application processing fee must accompany each application. The application must be filed no later than November 1.

2. Give the secondary school record and recommendation through the junior year to the appropriate secondary school official for completion and submission.

3. See that the required test results are forwarded to Duke University. These tests may be taken in March, May, or July of the junior year. The results of the tests taken during November of the senior year will not be received in time to be considered by the Admissions Committee under the Early Decision Program.

4. Submit a Letter of Intent. Early Decision candidates and their parents or guardians must sign a Letter of Intent. Through this letter the candidate states that Duke is definitely his first choice, and that he will submit no other applications until he has been notified of action on his Early Decision application. A candidate whose decision is postponed under Early Decision is free to apply to other institutions, but his application to Duke will remain active and will be considered for regular admission in April.

Notification. Decisions are mailed by December 1.

Transfer

Admission by transfer from other institutions may be arranged for a number of students, under certain well-defined regulations. All such candidates must submit official transcripts of all work completed at other colleges, accompanied by a statement of honorable dismissal, and scores on the Scholastic Aptitude Test of the College Entrance Examination Board. Courses in which a grade less than *C* has been earned cannot be



accepted for transfer credit. Students will not be considered for transfer beyond admission to the junior class. Further detailed regulations for admission by transfer may be obtained from the Office of Admissions.

Interviews

Personal interviews are not required for admission; however, candidates are welcome to visit the campus, and if they so desire, to talk with a member of the Admissions Office staff. The Office is open from 9:00 A.M. to 5:00 P.M., Monday through Friday. If a candidate wishes to schedule an appointment, it is desirable to write well in advance of the proposed visit. Appointments should be scheduled before February 1. Interviews cannot be guaranteed between February 1 and April 15 when applications for admission are being reviewed. In many cities throughout the country, personal interviews are available to candidates through local Alumni Admissions Advisory Committees. If such a committee exists in a candidate's community, he will be contacted and a personal interview arranged. These interviews with alumni representatives usually take place during January and February.



Financial Information

Estimated Expenses

Fees paid by the students cover only a part of the cost of their instruction and of the operations of the University. Income from endowment and contributions from the alumni, alumnae, and other public-spirited men and women meet the balance, which constitutes more than half the total cost.

Certain basic expenditures are to be considered in preparing a student's budget such as tuition, the general fee, room, and board. These expenditures together with a reasonable amount allotted for books and supplies are shown in the following table.

	Men	*Women*
Tuition	$1,800.00	$1,800.00
General Fee	200.00	200.00
Room Rent	335-500	355-480
Board	*600.00	†550.00
Books and Supplies	120.00	120.00

*Cafeteria estimate.
†Board rate.

Total expense involved in attending the University depends to a large extent upon the tastes and habits of the individual. It is realistic to suggest that the average Duke student can plan a budget of $3600.00 for the academic year. Travel costs, clothing purchases, and other optional major expenditures would have to be added to this estimate.

A majority of the rooms on campus are double rooms occupied by two students. A limited number of single rooms are available. Room requests are filled in the order they are received.



All women must pay a fixed board rate of $550.00 per academic year. The men's cafeteria expenses will vary for each individual.

An initial, non-refundable registration fee of $20.00 is charged all new students. This fee plus the required $50.00 deposit is paid upon acceptance into the University. One-half of the deposit serves as a continuing room deposit for succeeding semesters, and the other half serves as a continuing reservation deposit.

Freshmen are not permitted to own or operate motor vehicles at the University. Upperclassmen are allowed to operate cars, provided they are registered and operated in accordance with University regulations. A registration fee of $15.00 per semester is charged for each student-operated car.

Although these estimated expenses are based upon present existing charges, they are subject to change. The prospective student should contact the Admissions Office for more current information.

Financial Aid

Duke encourages able students who need financial assistance to apply for both admission and financial aid. It should be clearly understood that no preference is given to applicants for admission who are not aid applicants. Admissions decisions are made; then, among those to be accepted, all who have applied for financial aid are considered. Financial aid decisions will be given to accepted candidates for admission at the time of notification of acceptance.

Assistance is made available to students through awards, scholarships, loans, and grants. Scholarship and loan funds, including those provided in the National Defense Education Act of 1958, provided help for about thirty percent of each entering class. Part-time employment in various divisions of the University often supplements this amount for the particularly needy student, or provides modest help for the student not on scholarship or loan funds.

Specific awards include the following:

Angier B. Duke Memorial Scholarships, with a value from $500 to $3400, are awarded to men and women on a basis of merit. Though granted for one year, they are renewable from year to year so long as the student does satisfactory work.

Four ***W. N. Reynolds Memorial Scholarships,*** ranging in value up to $3600, are awarded on merit to children of employees of the R. J. Reynolds Tobacco Company, its subsidiaries and affiliates, and to residents or natives of North Carolina. They are renewable annually on the basis of satisfactory performance.

The ***Mary Duke Biddle Scholarship in Music Composition*** at a fixed stipend of $2500 per year is available to a member of each entering class. The scholarship is renewable from year to year so long as the student does satisfactory work. The student wishing to apply for this award will proceed in the normal manner but will be required to submit examples of his music composition. Eligibility is limited to students planning to major in music.

A number of ***United Methodist Scholarships,*** valued at $500 per year, are available on a basis of demonstrated need to Methodist students who have given evidence of leadership in their local Methodist Youth Fellowship Groups.

Students preparing to enter full-time religious work are eligible to apply for ***Christian Vocations Scholarships*** on the basis of need. Students approved are required to sign a note each semester for the amount of financial assistance granted to them. These notes will be cancelled upon evidence that the student has entered full-time Christian work after graduation.

Scholarships from industry, ranging in value from $200 to $2,000 are awarded to students with excellent academic records, and are renewable for each of the years of undergraduate study.

Details of all scholarships and other financial aids may be obtained from the Director of Financial Aid.



Courses

The following list of courses open to students in the undergraduate colleges is provided to suggest the range of courses available.

Art:

Aesthetics

The Principles of Art Criticism
History of Aesthetics

History of Art

Introduction to Art History
Fine Arts Photography Lab
Art and Archaeology of the Hellenic World
Roman Art and Archaeology
Mediaeval Architecture
Mediaeval Painting and Sculpture
Art of Northern Europe in the Fifteenth and Sixteenth Centuries
Italian Renaissance Art
Seventeenth Century Painting and Sculpture in Europe
American Art
The History of Prints and Drawings
Renaissance and Baroque Architecture
The Rise of Contemporary Architecture
Painting and Sculpture in the Eighteenth and Nineteenth Centuries
Modern Painting and Sculpture
Aegean Art
Early Greek Art
Early Mediaeval Architecture
Romanesque Sculpture
Architecture of Britain
Latin American Art
Architecture of North America
The Art of Illuminated Manuscript
Pre-Columbian Art and Archaeology
Research Problems in the Collections of the North Carolina Museum of Art
Independent Study
Research

Design

Beginning Studio
Painting
Advanced Drawing and Color
Advanced Painting
Printmaking

Asian and African Languages:

Chinese

Intensive Elementary Chinese
Intensive Intermediate Chinese

Hindi-Urdu

Modern Indian Literature
Intensive Elementary Hindi-Urdu
Intensive Intermediate Hindi-Urdu
Advanced Hindi Reading and Composition
Special Studies in South Asian Languages

Japanese

Intensive Elementary Japanese
Intensive Intermediate Japanese

Swahili

Elementary Swahili

Botany:

An Introduction to Biological Diversity
Plant Identification
Introductory Oceanography
Plant Anatomy
Principles of Heredity
General Bacteriology
Plant Diversity
Introductory Plant Physiology
Plant Ecology
Principles of Genetics Laboratory
Independent Study
Principles of Genetics
Lichenology
Bryology
Phycology
Mycology
Special Problems
Evolution
Cytology
Plant Biosystematics
Plant Metabolism
Plant Water Relations
Plant Systematics
Community Analysis and Classification
Principles of Plant Distribution
Physiology of Growth and Development
The Environment

Business Administration:

Managerial Accounting
Managerial Economics
Business Statistics
Corporation Finance
Investments
Production Management
Marketing
Accounting Theory
Corporate Accounts
Auditing: Theory and Practice
Income Tax Accounting
Business Law
Commercial Law for Accountants
Business Administrative Organization
Introduction to Decision Theory
Quantitative Methods in Business
Advanced Industrial Accounting and Management
Budgeting and Control
Business Policy
Advanced Accounting Seminar: Theory & Practice
Independent Study
Senior Seminar

Chemistry:

General Inorganic Chemistry
Advanced General Chemistry
Physical Chemistry of Aqueous Solutions
Modern Chemical Analysis
Quantitative and Instrumental Analysis
Organic Chemistry
Qualitative Organic Analysis
Elements of Theoretical Chemistry
Physical Chemistry
Nuclear Chemistry
Inorganic Chemistry
Chemical Instrumentation
Advanced Analytical Chemistry
Chemical Oceanography
Advanced Organic Preparations
Intermediate Organic Chemistry
Structural Analysis by Spectroscopic Methods
Thermodynamics
Biophysical Chemistry
Introduction to Research
Research
Laboratory in Organic Chemistry
Remedial Laboratory in Analytical Chemistry
Introductory Quantum Chemistry
Independent Study

Classical Studies:

Greek

Elementary Greek
Intermediate Greek
Sight Reading in Greek Prose
Greek Historians
Greek Orators
Homer and the Greek Lyric
Greek Tragedy and Comedy
Greek Prose Composition
Independent Study
Homer
Greek Lyric Poets
Aeschylus
Sophocles
Euripides
Aristophanes
Early Greek Prose
Thucydides
Greek Orators
Plato
Hellenistic Poetry
Advanced Prose Composition

Latin

Elementary Latin

Intermediate Latin: Cicero
Intermediate Latin: Vergil
Latin Prose and Poetry
Roman Comedy
The Roman Novel
Roman Stoicism
Roman Epicureanism
Sight Reading in Classical, Mediaeval, and Renaissance Latin
Roman Elegy: Propertius and Tibullus Ovid
The Roman Historians: Caesar and Sallust
The Roman Historians: Livy and Tacitus
Latin Prose Composition
Independent Study
The Verse Treatise
Roman Satire
Epic: Vergil
Epic: Lucan and Statius
The Prose Epistle
The Epistle in Verse
Fragments of Early Latin
Lyric and Occasional Poetry
Roman Oratory
Mediaeval Latin
Advanced Latin Composition
Seminar in Latin

Classical Studies

Greek Literature in English Translation
Latin Literature in English Translation
Greek History
Roman History
Greek Art and Archaeology
Roman Art and Archaeology
Roman Literature in English Translation
Ancient Historians and Historiography
Greek Drama
The Classical Tradition
Criticism of the Arts and Letters in Antiquity
Ancient Mythographers
The Athenian Empire
Alexander the Great
The Hellenistic Kingdoms
The Roman Revolution
The Decline and Fall of Rome
The Ancient Cities of Greece
Ancient Cities: Rome and her Colonies
Seminar in Classical Studies
Greek Sculpture
Greek Painting
Roman Architecture
Roman Painting
Greece to the Orientalizing Period
The Age of the Tyrants and the Persian Wars
The Age of Pericles
The Fourth Century through Alexander
The History of Rome to 146 B.C.
The Roman Revolution, 146-30 B.C.
Rome under the Julio-Claudians
From the Flavian Dynasty to the Severan
The Rise of the Hellenistic Kingdoms

Comparative Literature:

Independent Study
Romanticism
Realism and Symbolism
Foundations in Twentieth-Century European Literature
Readings in European Literature
Modern European Drama
Readings in Scandinavian Literature
The European Epic Tradition
Religious Values in Classical and European Literature
Recent Literature and its Religious Implications
Russian and Polish Romanticism

Economics:

Introduction to Economic Problems and Policies
The Evolution of Economic Ideas
Principles of Economics
Economic Geography of Latin America
Economic Geography of Africa
Fundamentals of Geography
Economic Geography of Southern Asia
The Economic History of the United States
Economic Statistics
Introduction to Econometrics
The Theory of the Firm
Economic Thought Since Adam Smith
Urban Geography
Money and Banking
Aggregative Economics
Labor Problems
Business and Government
Independent Study
Senior Seminar in Economics
Non-Western Urbanization
Advanced Money and Banking
Introduction to Mathematical Economics
Business Cycles
Economic Problems of Underdeveloped Areas
Economic History of Europe
State and Local Finance

Econometrics
Statistical Methods
Manpower and Human Resources
Trade Unionism and Collective Bargaining
International Trade and Finance
Competition and Monopoly
Latin American Economics
Public Finance
Soviet Economic History
Soviet Economic System
Quantitative Analysis in Economics
Microeconomic Theory
Urban Economics

Education:

Mental Hygiene
Social and Philosophical Foundations of Education
Elementary Education: Principles
Elementary Education: Practice
Elementary Education: Reading
Elementary Education: Language Arts
Elementary Education: Arithmetic
Elementary Education: Science
History of American Education
History of Education in European Culture
Educational Psychology
Children's Literature
Public School Music Education
Public School Music Literature
Vocal Music in the Public School
Instrumental Music in the Public School
Integrated Art in the Public School
Plastic Art in the Public School
Teaching and Supervision of Arithmetic
Comparative and International Education: Industrialized Nations
The School as an Organization
Philosophical Analysis of Educational Concepts
Social History of Twentieth-Century American Education
Secondary Education: Principles
Secondary Education: Internship
The Psychological Principles of Education
Comparative and International Education: Developing Societies
Comparative and International Education: South Asia
The Teaching of History and the Social Studies
Teaching Reading in the Elementary School
Teaching Reading in the Secondary School
The Teaching of Literature in Secondary School
The Teaching of Grammar, Composition, Mechanics, and Usage in Secondary School
Principles of Guidance
The Teaching of Mathematics
Law and Education
Assessment of Abilities
Assessment of Personality, Interests, and Attitudes
Science in the Elementary School
The Teaching of High-School Science

Engineering: **(See p. 76)**

English:

Freshman Composition
Imaginative Writing
Technical Communication
English for Foreign Students
Advanced Expository Writing
Narrative Writing

Speech and Drama

Essentials of Public Speaking
Persuasive Speaking
History of the Theater
Stagecraft
Play Production
The Speaking Voice
Oral Interpretation of Literature
Essentials of Public Speaking
Argumentation
Broadcasting

English and American Literature and Language

Representative British Writers
Representative American Writers
Eighteenth-Century Literature
Afro-American Literature
English Literature, 1789-1832
The English Novel From The Beginnings to 1800
The English Novel in the Nineteenth Century
The English Novel in the Twentieth Century
English Literature, 1832-1900
Twentieth-Century Poetry
American Literature
Medieval Literary Tradition
English Literature of the Middle Ages

English Literature: Elizabethan and Seventeenth Century Satire
Oral Interpretation of Literature
Readings in European Literature
Modern European Drama
Modern British Drama
Readings in Scandinavian Literature
Development of the English Language
Modern English Grammar
American Fiction
The European Epic Tradition
American Literature to 1800
American Literature from 1800 to 1860
American Literature from 1860 to 1915
American Literature since 1915
American Drama
Conference on Criticism
Conference on Drama
Conference on Poetry
Conference on Fiction
Conference on Prose Non-Fiction or a Special Topic
The Agrarian Spirit
The Industrial Spirit
Independent Study
Senior Seminar in English
Chaucer: The Canterbury Tales
Chaucer: Troilus and Criseyde and the Minor Poems
History of the English Language
Present-Day English
Old English Literary Tradition
Introduction to Folklore
Tudor and Stuart Drama, 1500-1642
Milton
Spenser
The Eighteenth Century
English Literature of the Early Nineteenth Century
English Literature of the Later Nineteenth Century
Literary Criticism
American Literature, 1800-1865
American Literature, 1865-1920
American Literature since 1920
English Drama, 1642-1800
Shakespeare
Literary Biography
English Literature in the Seventeenth Century
English Literature of the Twentieth Century
Major Developments in Contemporary American Poetry
Recent Critical Thought
Southern Literature
English Prose of the Sixteenth Century
English Non-Dramatic Poetry of the Sixteenth Century

Forestry:

Conserving Natural Resources

Geology:

Physical Geology
Historical Geology
Introductory Oceanography
Crystallographic Mineralogy
Fundamentals of Mineralogy
Igneous and Metamorphic Rocks
Sedimentary Rocks
Introduction to Geologic Field Methods
Majors Seminar
Independent Study
Field Methods in Physical and Geological Oceanography
Physical Oceanography
Geological Oceanography
Principles of Geological Oceanography
Shallow-Marine Geology
Stratigraphic Principles and Application
Sedimentology
Sediments in Thin Section
Sedimentary Minerals
Economic Geology
Principles of Structural Geology
Invertebrate Paleontology
Micropaleontology
Paleoecology
Geomathematics

Germanic Languages and Literature:

Elementary German
Intermediate German
Introduction to German Literature
Scientific German
German Prose Fiction
German Drama of the Nineteenth Century
German Conversation
Survey of German Literature
Contemporary German Literature
Introduction to the Age of Goethe
The German Lyric
Interpretation of German Poems
German Literature in English Translation
Independent Study
Goethe
Eighteenth Century
Middle High German
German Romanticism

Kleist, Grillparzer, and Hebbel
Heinrich Heine
Nineteenth-Century Literature
The Twentieth Century
Seventeenth-Century Literature
History of the German Language
Renaissance and Reformation Literature
The Teaching of German
German Cultural History
Bibliography and Methods

Health and Physical Education—Trinity College and The School of Engineering:

Foundations of Physical Education
Beginning and Intermediate Swimming
Swimming and Life Saving
Tumbling, Rebound Tumbling, and Apparatus
Badminton-Handball
Basketball-Speedball
Combatives
Soccer-Lacrosse
Advanced Swimming and Water Safety
Tennis-Volleyball
Golf
Track and Field Activities
Individual Development
Fencing
Bowling

Special Methods in Physical Education

Athletic Coaching in Secondary Schools

Theory and Practice in Physical Education

History and Principles of Physical Education
Recreational Leadership
The Administration of Physical Education and Athletics in Secondary Schools
Protective Practices in Physical Education

Health Education

School Health Problems

Health and Physical Education—The Woman's College and the School of Nursing

Freshman Activity
Sophomore Activity
First Aid and Safety in Physical Education
History and Principles of Physical Education
The Teaching of Physical Education in Elementary Schools
Methods and Materials in Recreation
Mammalian Anatomy
Kinesiology
Individual Physical Education
Organization and Administration in Physical Education
Measurement and Evaluation in Physical Education
History of the Dance
Creative Rhythms in Movement
Methods and Materials in Physical Education
Advanced Methods and Materials in Physical Education

Health Education

Health Education Fundamentals, Methods, and Materials
School Health
Health Problems of Developing Countries
Health Problems of Metropolitan Areas
Gereology and Health

History:

A History of European Civilization
Non-Western Civilizations
The Development of American Democracy to 1865
The Development of American Democracy, 1865 to the Present
Upper Class Tutorial
Modern Technology
Naval History and Elementary Strategy
Introduction to the Civilizations of Southern Asia
Renaissance and Reformation
Political and Constitutional History of England
Social and Cultural History of England
America in the Colonial and Early Modern Era
America in the Twentieth Century
History of Africa
European Imperialism and Colonialism
History of Socialism and Communism
Diplomatic History of the United States
City and Frontier in American History
Greek History
Roman History
The Athenian Empire
Alexander the Great
History of Latin America through the

Formation of the National Governments
Inter-American Affairs
The Development of the Major South American Powers
Medieval History
Europe in the Twentieth Century
Foreign Relations of the European Powers
Nineteenth-Century Europe
China in Modern Times
History of Modern Japan
Military History
The History of the South
The Rise of Modern Science
Russia from Ivan the Terrible to the Present
Reform and Politics in Nineteenth-Century America
Modern European Intellectual and Cultural History
The Agrarian Spirit
The Industrial Spirit
The Changing South
The History of Russia, 1801-1917
The United States, 1850-1900
City & Frontier in U.S. History
Recent Interpretations of United States History
The Old South
The Old Regime and the French Revolution, 1661-1815
The Age of the Reformation
Recent Interpretations of Modern European History
History of Spain
The Hispanic Colonies and Republics in America
The Institutional, Cultural, and Social History of Hispanic America
Modernization and Revolution in China since 1850
The History of Modern India 1757-1857
The History of Modern India and Pakistan, 1857-1947
Social and Intellectual History of the United States
American Colonial History and the Revolution, 1607-1789
Modern South America
British History from 1714-1867
British History from Mid-Nineteenth Century
Topics in the History of Science
Central Europe, 1849-1914
Reform and Politics in Nineteenth-Century U.S.A.
Origins of Indian Civilization
History of Modern Japan
Canada from the French Settlement
The British Empire in the Nineteenth Century (From 1783)
The Commonwealth in the Twentieth Century
Europe in the Middle Ages 395-1500
From Medieval to Early Modern England

Undergraduate Seminars

Sophomore Seminar
Renaissance Intellectual History
Seminar in Twentieth-Century Europe
Problems in American Intellectual History
The Progressive Era Through the New Deal
Seminar in American History before 1789
Problems in Nineteenth-Century American Reform and Politics
Nationalism and Communism in the Far East
From Rural to Urban Society in the United States
Nationalism and Freedom in Nineteenth Century Europe
Studies in the History of Socialism and Communism
European Expansion and Imperialism
Europe in the Age of the Reformation 1500-1650
The English Renaissance
Class and Social Mobility in English History
The Age of Newton
Processes of Development in Modern Japan, 1800 to the Present
Problems in the History of Russia Before 1917
Social Conflict and Political Parties from Jackson to Grant

Interdisciplinary Courses:

Introduction to the Civilizations of Southern Asia
Introductory Journalism
Mass Media in Contemporary Society
African Civilizations
The Changing South

Linguistics:

Introduction to Linguistics
Language and Society

Linguistic Anthropology
Development of the English Language
Modern English Grammar
Old English Grammar and Readings
History of the English Language
Old French Literature
Middle High German
History of the German Language
Symbolic Logic
Philosophy of Language
General Semantics and Theory of Languages
Romance Linguistics
Old Spanish Language

Mathematics:

Introduction to Finite Mathematics
Introductory Calculus
Introductory Mathematical Analysis
Introduction to Digital Computation
Intermediate Calculus
Introduction to Linear Algebra
Applied Mathematical Analysis
Modern Algebra
Introduction to Linear Programming and Game Theory
Number Theory
Elementary Differential Equations
Basic Statistics
Probability and Statistics
Advanced Calculus
Junior Mathematics Seminar
Non-numerical Computation
Elementary Topology
Complex Analysis
Introduction to Mathematical Logic
Independent Study
Geometry for Teachers
Intermediate Analysis
Numerical Analysis
Theory of Numbers
Algebraic Numbers
Sample Designs
Abstract Algebra
Design of Experiments
Combinatorial Analysis
Arithmetic of Polynomials
Non-Parametric Statistics
Introductory Topology
Algebraic Topology
Probability
Applied Mathematical Statistics
Least Squares Analysis of Linear Models
Applied Mathematical Methods
Foundations of Mathematics
Applications of Stochastic Processes
Analysis I, II
Multivariate Statistics
Mathematical Foundations of Statistical Inference
Axiomatic Set Theory

Medical Science:

Anatomy of the Lower Extremities as it Relates to Locomotion

Military Science:

Air Force Aerospace Studies

Leadership Laboratory
Defense of the U. S.
World Military Systems
Leadership Laboratory
Growth and Development of Aerospace Power
The Problems of Flight and the Aerospace Sciences of Weather and Navigation
The Professional Officer

Naval Science

Principles of Naval Organization and Management
Naval Ships Systems
Drills: Seapower and Maritime Affairs Seminar
Navigation
Naval Operations
Naval Weapons Systems
Evolution of the Art of War
Modern Basic Strategy and Tactics
Amphibious Warfare

Music:

Theory and Composition

Music Theory I
Composition I
Music Theory II
Music Theory III
Orchestration

History and Literature

Introduction to Music Literature
Masterworks of Music Literature
Choral Literature
Piano Literature
Solo Song Literature
Twentieth-Century Music
Organ Literature
History of Music

Music in the Eighteenth Century
Music in the Nineteenth Century
Opera Literature
World Music
Independent Study
Senior Seminar in Music

Music Education and Pedagogy

Vocal Diction
Piano Methods and Materials
Conducting
Techniques of Keyboard Ensemble and Accompanying
Public School Music Education (Elementary)
Public School Music Literature (Elementary)
Vocal Music in the Public School (Secondary)
Instrumental Music in the Public School (Secondary)

Nursing: (See p. 78)

Philosophy:

Knowledge, Fact, and Value
Logic
Freshman Tutorial
History of Philosophy: Ancient and Modern
Philosophy of Religion
Symbolic Logic
Philosophy of Science
Political and Social Philosophy
Social Ideals and Utopias
Philosophy of Language
Epistemology
Metaphysics
Ancient and Modern Ethical Theories
Introduction to Medieval Philosophy
Nineteenth Century Philosophy
Introduction to Phenomenology
Existentialism
Aesthetics: The Philosophy of Criticism
Contemporary Ethical Theories
The Philosophy of History
Political Values
Plato
Aristotle
Medieval Philosophy
Kant
British Empiricism
Continental Rationalism
Recent and Contemporary Philosophy
American Pragmatism
Classical German Philosophy
Introduction to the Philosophy of Science
Philosophy of Science
Philosophy and the Sciences
General Semantics and Theory of Language
Philosophical Cosmology
Philosophical Analysis
Philosophy of Mind
Critical Philosophy

Physics:

Introductory Physics
Fundamentals of Physics
General Physics
Modern Physics
Electronics
Thermodynamics and Kinetic Theory
Classical Mechanics
Introduction to Solid State Physics
Introduction to Quantum Mechanics
Advanced Physics Laboratory
Advanced Electronics
Theoretical Physics
Electricity and Magnetism
Elementary Investigations

Political Science:

Introductory Course

The American Political System

Political Theory and Methodology

Introduction to Political Philosophy
Democratic Theory and Political Reality
Introduction to Law
Introduction to American Political Thought
Contemporary Political Ideologies
Principles and Methods of Political Inquiry
Empirical Theory and Methodology
Political Philosophy from Plato to Machiavelli
Modern Political Thought
Recent and Contemporary Political Theory
American Political Theory
Comparative Political Analysis and Political Development

Comparative Government and Politic

Comparative Government and Politics: Europe
Problems of Political Development in the New States
The Government and Politics of the U.S.S.R.

Soviet Foreign Relations
Comparative Government and Politics: Southern Asia
Comparative Administrative Law
Comparative Government and Politics: Western Europe
The British Commonwealth
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Comparative Government and Politics: Sub-Saharan Africa

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State and Local Government Today
American Political Parties and Practical Politics
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Groups in American Politics
Politics and the Media of Mass Communication
Political Behavior in Elections
Political Behavior in Policy Making
Science and Government
Public Administration
Administrative Responsibility
The Politics of Distribution
Legislation
Government and Planning
Government Regulatory Policy and Administration
Political Implications of Economic Legislation
The Changing South
American Constitutional Law and Theory
American Constitutional Law and Current National Problems
Problems in State Government in the United States
American National Government
Public Administrative Organization and Management
National Administration
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Elements of International Relations
Modern International Politics
The New States of Africa in World Affairs
U. S. Foreign Policy
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Psychology:

Introductory Psychology
Personality
Introductory Social Psychology
Comparative Psychology
Applied Psychology
Advanced General Psychology
Psychology of Personality
Statistical Methods in Psychology
Experimental Methods in Psychology
Child Psychology
Adjustment of the Pre-School Child
Adolescent Psychology
Principles and Methods of Psychological Evaluation
The Psychology of Individual Differences
Personality and Behavior Disorder
Instrumental Behavior
Experimental Methods in Cognitive Psychology
The Psychology of Learning
Experimental Approaches to Personality
Experimental Social Psychology
Psychology of Perception and Thinking
Motivation
Psychology and International Relations
Physiological Psychology
Introduction to Biological Psychology
Personality Theory
Tutorial
Independent Study and Research
Psychology of Perception
Comparative Psychology
Cognition and Higher Mental Processes
Conditioning and Learning
Developmental Psychology
Biological Psychology
Research Methods in Social Psychology
Social Psychology
Neuroendocrinology and Behavior
Personality and Experimental Dynamics
Seminar in Personality

Theoretical Psychology
Functional Neurophysiology
The Electroencephalogram and Psychological Function
Behavioral Correlates of Brain Damage in Man
Personality Theory
Personality Assessment
Introduction to Exceptional Children
Personality and Person Perception
Personality Development
Principles of Psychological Measurement
Introduction to Methods in Psychotherapy
History of Psychology

Religion:

The English Bible
The Religion of the Bible
Jesus: The Man and His Message
Introduction to Christian Ethics
Survey of the World's Living Religions
Principles of Investigation
The Religion of the Bible
The Prophets of the Old Testament
The Book of Job in World Literature
The Mission and Message of Jesus
The Life and Letters of Paul
Varieties of Early Judaism
History of the Christian Church through the Reformation
History of Christianity since the Reformation
The Correspondence of the Great Fathers of the Church
Christianity in America
Contemporary Religions in the United States
Christian Beliefs
Problems of Religious Thought
Contemporary Jewish Thought
Current Interpretations of Christianity
Christian Ethics
Ethics and Modern Technology
Christian Marriage and the Family
Religions of the Ancient Near East
Religious Quests of the Greco-Roman World
Religion among Preliterate Peoples
Non-Christian Religions of the Modern World
World Religions and Social Change
Myth and Symbol
Mysticism: Sacred and Profane
Psychology and Religion
Religious Values in Classical and European Literature
Recent Literature and Its Religious Implications
Man in Modern Prophetic Thought
The Old Testament
Introduction to the History of Religion
Problems in Theology and Ethics
Seminar: Religious Studies
Themes in Christian Theology
Seminar: Studies in Christian Life & Thought
Ethical Issues in the Life Cycle
Seminar: Religion and the Social Sciences
Problems of Religious Thought
Independent Study
Honors Research
Contemporary British Theology
The Theology and the Gospel in the Epistles of John
The Theology of Karl Barth
Religions of East Asia
Origins of Indian Civilization
Sociological Analysis of Religion
Institutional Analysis of Religious Bodies

Seminars

Biblical Studies
Church History
Theology and Ethics
Christianity and Culture
History of Religions

Romance Languages:

French

Elementary French
Intermediate French
Introduction to French Literature
Spoken French
Masterworks of French Literature
The Sixteenth Century
Explication des Textes
French Romanticism
Toward Modernism in French Poetry
French Drama of the Nineteenth Century
French Drama of the Twentieth Century
Diderot
The Nineteenth-Century Novel
Masterpieces of French Medieval Literature
French Drama of the Seventeenth Century
Seventeenth-Century Poetry, Novel, and Rhetoric
The French Enlightenment
The Novel in the Eighteenth Century
Advanced Composition and Conversation

Independent Study
Contemporary French Life and Thought
Advanced Composition and Syntax
French Phonetics
French Literature of the Seventeenth Century
Mallarmé and Rimbaud
Old French Literature
The Nineteenth-Century French Novel
French Literary Criticism
History of the French Language
From Renaissance to Baroque in French Literature of the Sixteenth Century
French Poetry of the Twentieth Century
Contemporary French Theatre
Proust
Baudelaire
French Literature and Thought in the Age of Enlightenment
French Literature of the Twentieth Century

Italian

Italian
Masterworks of Italian Literature in English Translation
Readings in Italian Literature
The Renaissance

Portuguese

Portuguese
Conversation

Spanish

Elementary Spanish
Intermediate Spanish
Introduction to Spanish Literature
Spoken Spanish
Representative Writers of Spanish American Literature
Spanish Literature of the Renaissance and the Baroque
Spanish Romanticism
Analysis of Great Spanish Authors
Spanish Realism
Golden Age Literature: Cervantes
Advanced Conversation
Independent Study
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Spanish Lyric Poetry before 1700
The Origins of the Spanish Theater
Modern Latin American Literature
Contemporary Latin American Literature
Old Spanish Language
Old Spanish Literature
Spanish Phonetics
Advanced Composition and Syntax
Nineteenth-Century Novel
Golden Age Literature: The Drama
Contemporary Spanish Literature: Essay and Lyric Poetry
Contemporary Spanish Literature: Novel

Romance Languages

The Teaching of Romance Languages
Approaches to Romance Literature

Slavic Languages and Literatures:

Elementary Russian
Intermediate Russian
Introduction to Russian Literature of the Nineteenth Century
Introduction to Russian Literature of the Twentieth Century
Russian Literature and Culture Through the Nineteenth Century
The Russian Theatre and Drama
Twentieth-Century Russian Prose
Masterpieces of Russian Literature of the Nineteenth Century
Modern Russian Poetry
Independent Study
The Novelists of Nineteenth-Century Russia
Soviet Literature and Culture
Pushkin
Advanced Composition and Syntax
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Leo Tolstoy
Gogol
Chekhov
Fyodor Dostoevsky
Ivan Turgenev
Polish Literature of the Twentieth Century
The Structure of Polish in Relation to Russian
Readings in Contemporary Polish Prose in the Original
Russian and Polish Romanticism

Sociology and Anthropology:

Sociology

Introduction to Sociology: Concepts and Procedures
Introduction to Sociological Research
Sociology of Modern Africa
Comparative Social Structure

Introduction to Population and Human Ecology
The Sociology of Mass Communication
Deviant Social Behavior
Political Sociology
Urban Sociology
Industry and Society
The Family
Sociology of Religion
Sociology of the South
The Sociology of the Arts
Introduction to Industrial Sociology
The Negro in America
Collective Behavior and Social Movements
Independent Study
The Changing South
Social Stratification
The Sociology of Occupations and Professions
Population Dynamics and Social Change
Community and Society
The Sociology of Modernization
Social Institutions
Race and Culture
Religion and Social Change
The Socialization Process
Social Attitudes and Individual Behavior
Social Structure and the Life Cycle
Principles of Sociological Analysis
Methodology in Sociology
Statistical Analysis in Sociology

Anthropology

General Anthropology
Cultural Anthropology
Introduction to the Civilizations of Southern Asia
World Ethnography
Peoples of the World: American Indian
Peoples of the World: Oceania
Peoples of the World: Asia
Cultural Change and Stability
Political Anthropology
Comparative Social Organization
The Analysis of Mythology and Ideology
The Anthropology of Agriculture
Independent Study
The Changing South
Society and Culture in India
Topics in African Anthropology
Physical Anthropology
Human Genetics
Language and Society
Indo-Aryan Linguistics
Economic Anthropology
Linguistic Anthropology: Phonemics
Linguistic Anthropology: Morphology and Syntax
Anthropology of Law
Primitive Art and Music
Primitive Religion
Personality and Society
Personality and Culture
Analysis of Kinship Systems
Seminar in Selected Topics
Anthropological Theory

Zoology:

An Introduction to Living Systems
Comparative Vertebrate Anatomy
Heredity and Eugenics
General Embryology
Principles of Ecology
Evolution
Ornithology
Human Evolution
Principles of Physiology
Animal Diversity
Animal Behavior
Marine Ecology
Biological Oceanography
Chemical Oceanography
Limnology
Vertebrate Zoology
Experimental Embryology
Human Genetics
Systematic Zoology
Cytology
Topics in Cell Structure and Function
Radiation Biology
Physical Biology
Biological Nucleonics
Introductory Biochemistry
Physiological Ecology of Marine Animals
Comparative Physiology
Cellular Physiology
Invertebrate Zoology
Invertebrate Embryology
Principles of Genetics

University Courses:

Comparative Politics: Western Europe
Social Impact and Response in the Developing World
Science, Society, and Education
Canada: Unknown Neighbor in Crisis

School of Engineering:

Engineering Design
Statics

Introductory Electric Systems
Mechanics of Deformable Bodies
The Structure and Properties of Solids
Thermodynamics
Dynamics
Heat Transfer
Fluid Mechanics
Fields
Legal Aspects of Engineering
Patent Law for Engineers

Civil Engineering

Geodetic and Location Measurements
Plane Surveying
Transportation Engineering
Materials of Construction
Hydrology
Hydraulic Engineering
Sanitary Engineering
Sanitary Engineering Design
Structural Mechanics
Structural Design
Introduction to Soil Mechanics
Projects in Civil Engineering
Professional Engineering
Structural Engineering
Engineering Systems Analysis
Advanced Mechanics of Materials
Experimental Mechanics
Plates and Shells
Elasticity
Mechanical Behavior of Materials
Structural Materials
Incompressible Fluid Flow
Open Channel Flow
Flow through Porous Media
Coastal and Tidal Hydraulics
Structural Engineering
Reinforced Concrete Design
Prestressed Concrete Design
Foundation Engineering
Earth Structures
Sanitary Engineering Unit Operations and Process Design
Engineering Analysis

Electrical Engineering

Electronics and Signals
Electromechanical Energy Conversion
Physical Electronics
Electromagnetic Fields and Waves
Design Colloquium
Projects in Electrical Engineering
Pulse and Digital Electronics
Modulation Systems and Noise
Electronic Processes in Materials
Dynamics of Electromechanical Energy Conversion
Nuclear Engineering Fundamentals
Microwaves and Quantum Electronics
Linear Feedback Systems
Random Signals and Noise
Information Theory and Communication Systems
Signal Detection and Extraction Theory
Switching and Logic Networks
Solid State Theory
Solid State Materials
Principles of Magnetism
Semiconductor Physics
Masers
Nonlinear Analysis
Semiconductor Electronic Circuits
Network Synthesis
Linear Control Systems
Selected Topics in Controls Systems
Advanced Electric Energy Conversion
Advanced Topics in Electrical Engineering
Electromagnetic Theory
Applications of Electromagnetic Theory

Mechanical Engineering

Thermodynamics II
Physical Metallurgy
Polymer Science
Transport Phenomena
Dynamics of Gases
Mechanical Design
Response of Systems
Heating, Air Conditioning, and Refrigeration
Combustion Engines
Mechanical Engineering Laboratory
Special Topics in Mechanical Engineering
Power Plants
Vibration Control
Industrial Engineering
Kinematics of Mechanisms
Computer Techniques for Simulation and Design
Fundamentals of Nuclear Engineering
Projects in Mechanical Engineering
Theoretical Thermodynamics
Introduction to Advanced Mechanics
Compressible Fluid Flow
Heat Transfer
Theoretical and Applied Polymer Science
Intermediate Fluid Mechanics
Systems Response and Control
Fluid Control Systems

Advanced Mechanical Vibrations
Refrigeration and Cryogenics
Energy Conversion
Advanced Topics in Mechanical Engineering
Theory of Lubrication and Bearing Design
Nuclear Reactor Power Cycles

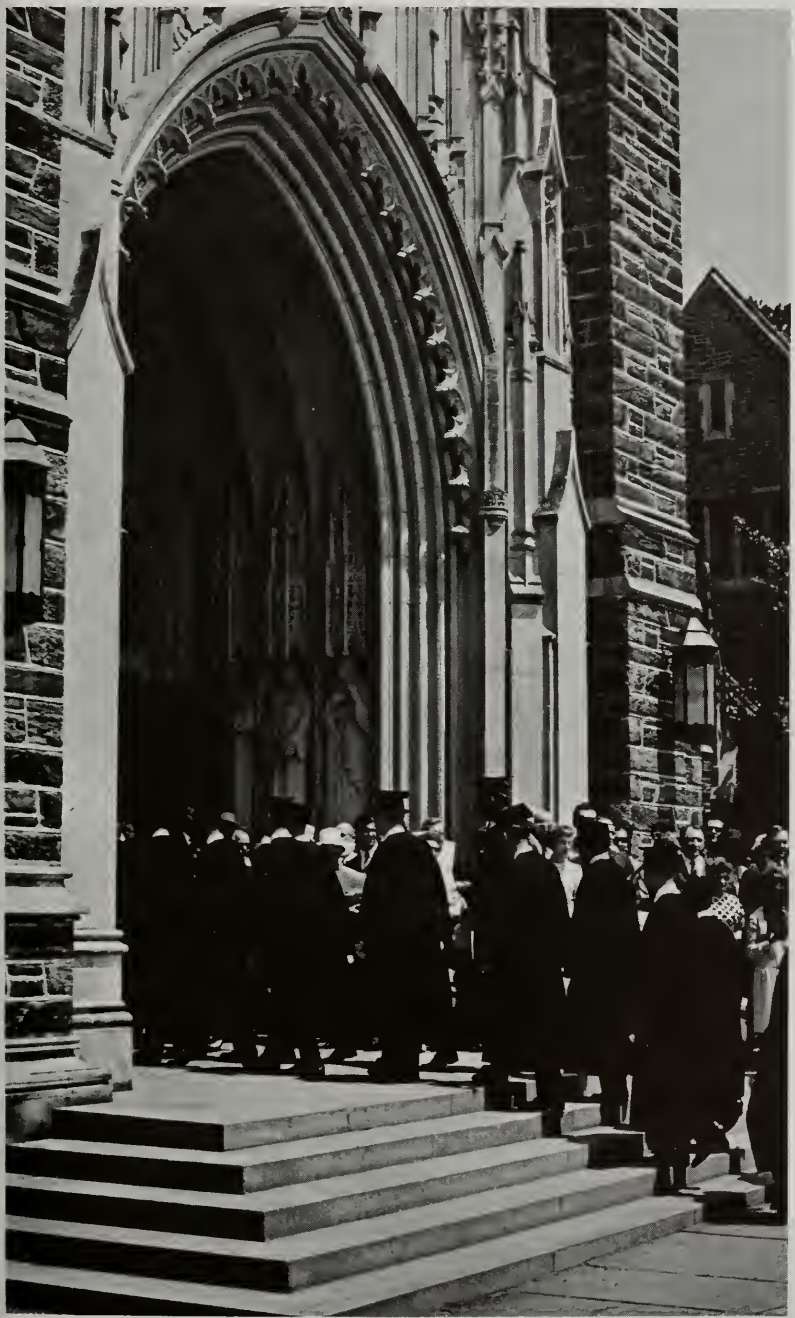
Biomedical Engineering

Projects in Biomedical Engineering
Introductory Biomedical Engineering
Advanced Topics in Biomedical Engineering

School of Nursing:

Nursing and Nursing Related Sciences

Concepts of Natural Sciences Fundamental to Normal Functioning of Man
Nursing of Children
Maternity Nursing
Medical-Surgical Nursing Theory
Medical-Surgical Nursing Practicum
Community Health and Social Forces
Social Foundation of Nursing
Psychiatric Nursing
Psychiatric Nursing Group Work
Public Health Science
Public Health Nursing
Team Leadership and Intensive Nursing Care



Correspondence Directory

Address any special inquiries to the following at:

Duke University
Durham, North Carolina 27706

Admissions:

Admission requirements, application forms, interviews:

Director of Undergraduate Admissions

Financial Aid:

Scholarship information, loans, student employment:

Director of Financial Aid

Academic Programs:

Information about courses of study and special opportunities:

Chairman of the appropriate department

How To Reach Duke

Durham, North Carolina, is located on routes I-85 and U.S. 15-501

By car—Exits for Duke University are clearly marked.

By bus—Five companies have regularly scheduled service to Durham.

By plane—Three airlines have regularly scheduled service to the Raleigh-Durham Airport. Limousine service directly to the campus is available.

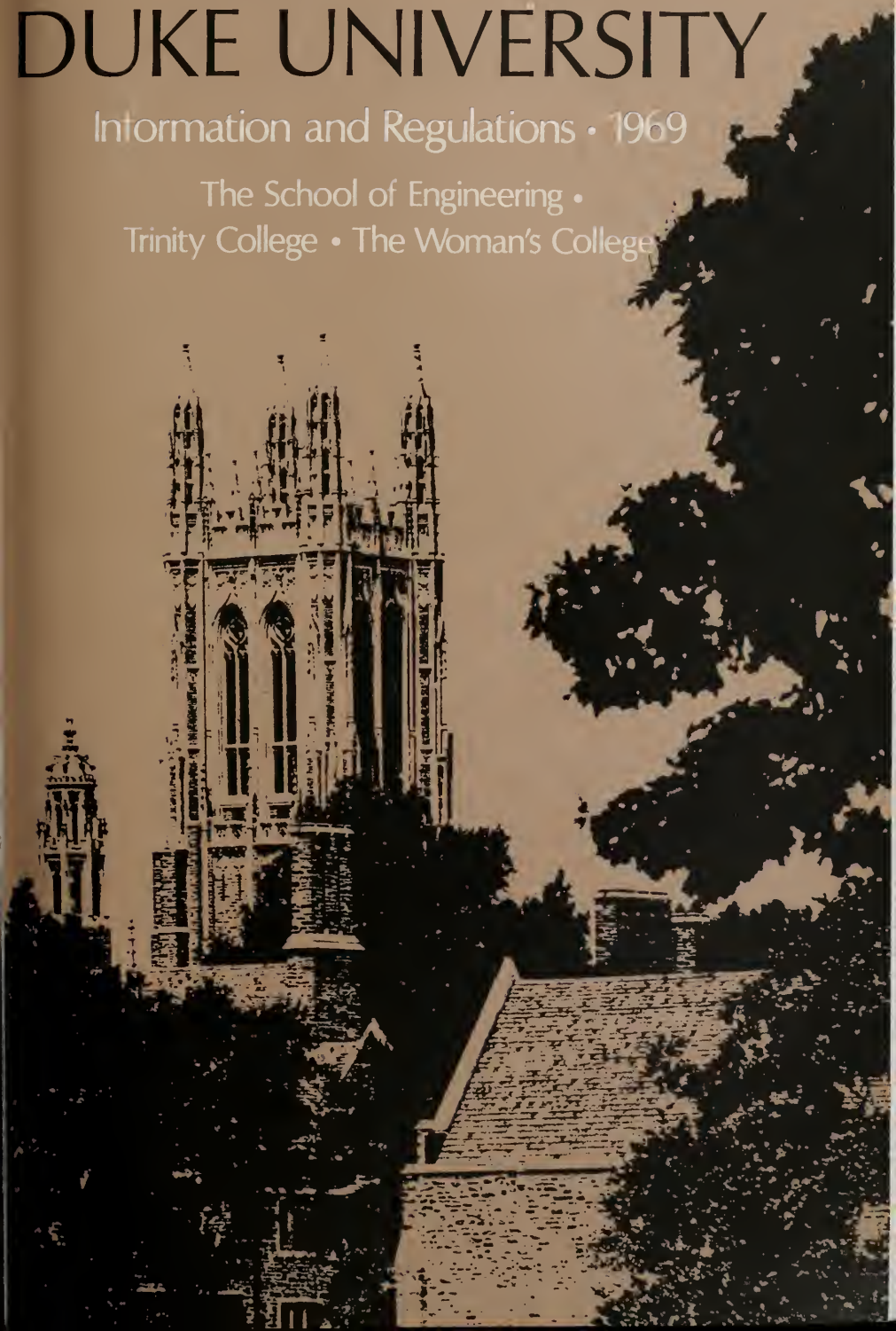
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BULLETIN OF DUKE UNIVERSITY

Information and Regulations • 1969

The School of Engineering •
Trinity College • The Woman's College



Annual Bulletins

For *Bulletin of Information for Prospective Students,* apply to Office of Undergraduate Admissions, Duke University, Durham, N. C. 27706

For *Bulletin of Undergraduate Instruction,* apply to the Registrar, Duke University, Durham, N. C. 27706

For *Bulletin of the Graduate School,* apply to the Dean of the Graduate School, Duke University, Durham, N. C. 27706

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For *Bulletin of the School of Nursing,* apply to the Dean of the School of Nursing, Duke University, Durham, N. C. 27706

For *Directory of the Officers, Faculty and Staff,* apply to Office of the Secretary, 215 Allen Building, Duke University, Durham, N. C. 27706

For *Bulletin of Faculty Publications,* apply to Office of the Vice Provost, 207 Allen Building, Duke University, Durham, N. C. 27706

Volume 41 June 1969 No. 8B

The Bulletin of Duke University is published monthly except in July, August, September, and December by Duke University, Duke Station, Durham, N. C. 27706. Second-class postage paid at Durham, N. C.

Cover design is a line conversion photograph of the Chapel.

BULLETIN OF DUKE UNIVERSITY

Information and Regulations 1969

THE SCHOOL OF ENGINEERING
THE WOMAN'S COLLEGE
TRINITY COLLEGE

Durham, North Carolina 1969

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University Calendar 1969-1970

1969

September

16 Tuesday, 7:30 p.m.—Orientation begins: assemblies for all new students entering Trinity College, The Woman's College, the School of Engineering, and the School of Nursing
18 Thursday—Registration and matriculation of all students of Trinity College, The Woman's College, the School of Engineering, and the School of Nursing who have not preregistered
20 Saturday—Final registration of preregistered students
21 Sunday—University convocation
22 Monday—Fall semester classes begin

November

1 Saturday—Last day for reporting six-weeks grades
10-13 Preregistration for spring semester 1970
26 Wednesday, 12:30 p.m.—Thanksgiving recess begins

December

1 Monday, 8:10 a.m.—Classes are resumed
11 Thursday—Founders' Day
20 Saturday, 12:30 p.m.—Christmas recess begins

1970

January

5 Monday, 8:10 a.m.—Classes are resumed
10 Saturday, 12:30 p.m.—Fall semester classes end
12-13 Monday, Tuesday—Fall semester reading period
14 Wednesday—Final examinations begin
23 Friday—Final examinations end

29 Thursday—Registration and matriculation of new students
30 Friday—Last day for matriculation for the spring semester

February

2 Monday—Spring semester classes begin

March

11 Wednesday—Last day for reporting six-weeks grades
21 Saturday, 12:30 p.m.—Spring recess begins
30 Monday, 8:10 a.m.—Classes are resumed

April

13-16 Monday-Thursday—Preregistration for Summer Session and fall semester 1970
24-25 Friday-Saturday—Spring weekend. Classes are not held

May

14 Thursday, 5:00 p.m.—Spring semester classes end
15-16 Friday-Saturday—Reading period
18 Monday—Final examinations begin
27 Wednesday—Final examinations end
30 Saturday—Commencement begins
31 Sunday—Commencement Sermon

June

1 Monday—Graduation exercises

Programs of Study and Requirements for Degrees

Duke University offers in Trinity College and The Woman's College programs of study which lead to the degrees of Bachelor of Arts and Bachelor of Science; and in the School of Engineering the degree of Bachelor of Science in Engineering. Within the four-year curriculum of each college or school, the student has the major responsibility for devising and carrying through a course program appropriate to his goals and background. He will be assisted in this task by departmental directors of undergraduate studies, supervisors of freshmen instruction, faculty advisers, and by academic deans of his school or college.

Trinity College and The Woman's College

Academic programs in Trinity College and The Woman's College are designed for students who desire to major in one of the following subjects: accounting, anthropology, art, botany, business administration, chemistry, economics, elementary education, English, French, geology, German, Greek, history, Latin, mathematics, music, philosophy, physical education for women, physics, political science, psychology, religion, Russian, sociology, Spanish, and zoology. In addition to majoring in one of these subjects or in an approved interdisciplinary program, a student must complete courses in other disciplines and satisfy certain requirements relating to quality of academic work and residence in the college. A portion of the curricular and credit requirements for both the Bachelor

of Arts and Bachelor of Science degrees may be satisfied through the Advanced Placement Program of the CEEB undertaken before enrollment in the colleges.

Starting with the academic year 1969-70, a new curriculum and new degree requirements are applicable to entering students. For students in the Classes of 1970, 1971, and 1972, the basic degree programs in effect at the time of their initial enrollment continue to apply, although certain aspects of the new curriculum and certain modifications of degree requirements are applicable.

Degree Requirements for Students in the Classes of 1970, 1971, and 1972

Candidates for the Bachelor of Arts and the Bachelor of Science degrees must satisfy requirements pertaining to curriculum, credits, grade-average, and residence. The curricular requirements for each degree differ, and are described separately below; requirements relating to credits, grade-average, and residence are the same for each degree, and are described under common headings.

Curricular Requirements: Bachelor of Arts

For graduation with the degree of Bachelor of Arts, the following course work, or equivalent, must be completed in accordance with the academic regulations as stated in this *Bulletin*.

Uniform Courses	*Semester Courses*
English	2
Foreign Language	4
Natural and Formal Sciences	2
Religion	1
Social Science and History	2
Humanities	2

These requirements are described in detail below.

English. 2 s.c. This requirement is met by the completion of English 1-2.

Foreign Language. 4 s.c. or equivalent. The languages which meet this requirement are French, German, Greek, Hindi-Urdu, Italian, Latin, Russian, and Spanish. All students are required to demonstrate proficiency in a foreign language equivalent to that attained by completing the second college year of that language, either by passing the second year of the language at Duke or by passing an examination upon entrance to Duke University or any time thereafter. Proficiency may also be demonstrated

by satisfactory performance, as determined by the appropriate department, on the CEEB Advanced Placement Program Examination in the language, or by qualifying for the third-year course in certain languages at Duke by attaining the following minimum scores on the CEEB Achievement Tests: French 91, 557; German 91, 572; Spanish 91, 624; and Latin 91, 640.*

Natural Science-Formal Science. 2 s.c. A student may satisfy this requirement by completing (1) two laboratory courses in one of the natural sciences (biology, chemistry, geology, or physics), (2) two courses in mathematics (except Mathematics 51), *or* (3) one course in mathematics (except Mathematics 51) and one course in logic (Philosophy 48).

Religion. 1 s.c. selected, before September 1, 1969, from 1, 2, 51, 52, 55, 85, 93, 105; and, after September 1, 1969, from 50, 52, 55, 57, 59.

Social Science and History. 2 s.c. selected from a single department and from the following list: Economics 1-2 or 51-52, 132, 149, 150, 154; History 1-2 or 51-52; Political Science 11 or 61 to be followed by a political science course with a 100 number; Psychology 91 or 92 or 93 *and* 94 (formerly 100) or 95 (formerly 121) or 101; *or* Sociology 91 to be followed by any sociology course numbered below 190, or Anthropology 93-94.

Humanities. 2 s.c. selected from the following list, with both courses drawn from the same division of literature, philosophy, or art and music.

Literature: English 55-56, 57-58, 111-112, 125-126, 131-132, 137-138, 143-144, or any two consecutive courses in the series 173-176; Classical Studies 111-112 or 52, 121-122, or 51; *or* any two foreign language literature courses above 100 (not given in translation).

Philosophy 41, 42 (41 *or* 42 after 1968-69), 93, 94, 101, 109, 110, 111, 117, 119, 121, 122.

Art and Music: Art 51-52, Music 1-2, 51-52, or 125 followed by 134, 139, 163, or 165; Classical Studies 141-142 or 55-56.

Note that in social sciences and history the two courses must be in the same department; in the humanities, in the same division. Note also that in double-numbered courses, i.e., courses joined by a hyphen, both courses must be completed to fulfill the requirement in social science and in the humanities.

Physical Education. Four activity courses in physical education are required for graduation and normally are completed by the end of the sophomore year.

*CEEB Achievement Tests either are not available in Greek, Hindi-Urdu, Italian and Russian, or have not been sufficiently validated at Duke to satisfy proficiency requirements. Students presenting CEEB Achievement Test scores in any of these languages should consult the Director of Undergraduate Studies in the appropriate department at Duke about means of validating such scores.

Major and Related Work. The major work consists of six to eight semester courses above the introductory level in one department. Each department specifies, with approval of the undergraduate faculty, the number of introductory courses required for the major, and approves the choice of higher level courses in the major. Whenever the department defines the major as eight semester courses above the introductory courses, the student, with the prior approval of the director of undergraduate studies, may substitute two semester courses at the 100 or 200 level in a related discipline for two of the eight courses.

Six semester courses of related work must be taken in two or more other departments and are selected subject to the approval of the major department and academic dean of the appropriate college; ordinarily, related work may not include more than two semester courses or one double-course open primarily to freshmen. With the consent of the department, however, majors in mathematics, the natural sciences, and science education may include as related work introductory courses in mathematics and the natural sciences. Courses satisfying the uniform course requirements may also be counted toward the requirements in major and related work; two uniform course requirements, however, may not be satisfied with the same course.

Elective Courses. In addition to the required uniform courses, physical education courses, and the major and related work described above, other courses must be elected to make a combined total of semester-hours and semester-courses as specified and explained in the section on pp. 6-7 concerning "Credit Requirements."

Students whose programs of study permit may select a maximum of six semester-courses in engineering, forestry, or medical science. The courses elected in these subjects must be approved by the major department and by the student's academic dean.

Curricular Requirements: Bachelor of Science

For graduation with the degree of Bachelor of Science, the following course work, or equivalent, must be completed in accordance with the academic regulations as stated in this *Bulletin.*

Uniform Courses	*Semester Courses*
English	2
Foreign Language	4
Mathematics	2
Natural Science	2
Social Science and History	2
Religion	1
Humanities	2

These requirements are described below.

English. 2 s.c. This requirement is met by the completion of English 1-2.

Foreign Language. 4 s.c. or equivalent. The foreign language requirement for the B.S. degree is identical to that for the A.B. degree, except that the major department may specify the foreign language to be taken to satisfy the requirement. For a department's requirement in this respect, see its description of major requirements.

Mathematics. 2 s.c. This requirement may be met by completion of Mathematics 21 and 22 or 31 and 32.

Natural Science. 2 s.c. This requirement can be satisfied by courses in one of the natural sciences, namely, biology, chemistry, geology, or physics. The courses must include laboratory work.

Social Sciences and History. 2 s.c. This requirement is satisfied by courses selected from a single department and from the following list: Economics 1-2, 51-52, 132, 149, 150, 154; History 1-2 or 51-52; Political Science 11 or 61 to be followed by any political science course with a 100 number; Psychology 91 or 92 or 93 *and* 94 (formerly 100) or 95 (formerly 121) or 101; Sociology 91 to be followed by any sociology course numbered below 190 or Anthropology 93-94. (Double-numbered courses separated by a hyphen do not satisfy this requirement unless both courses are completed.)

Religion. 1 s.c. selected, before 1969-70, from 1, 2, 51, 52, 55, 85, 93, 105; and after 1968-69, from 50, 52, 55, 57, 59.

Humanities. 2 s.c. selected from the following list and in the same department: English Literature 55-56, 57-58, 111-112, 125-126, 131-132, 137-138, 143-144, or any two consecutive courses in the series 173-176; Classical Studies 111-112 or 52, 121-122 or 51; any two foreign language literature courses above 100 not given in translation; Philosophy 41, 42 (41 *or* 42 after 1968-69), 93, 94, 101, 109, 110, 111, 117, 119, 121, 122; Art 51-52; Music 1-2, 51-52, or 125 followed by 134, 139, 163, or 165; Classical Studies 141-142 or 55-56. (Double-numbered courses separated by a hyphen do not meet this requirement unless both courses are completed.)

Physical Education. Four Physical Education activity courses are required for graduation and normally are completed by the end of the sophomore year.

Major and Related Work. Major and related work consists of at least sixteen semester courses in the natural sciences. This work must be selected from the Departments of Botany, Chemistry, Geology, Mathematics, Physics, Psychology, and Zoology. The major work consists of a minimum of six semester courses above the introductory courses in one department. The choice of courses is subject to the approval of the de-

partment. Whenever the department defines the major as eight semester courses or more above the introductory courses, the student, with the prior approval of the director of undergraduate studies, may substitute two semester courses at the 100 or 200 level in a related discipline for two of the eight courses. The related work is taken in at least two other departments and is selected subject to the approval of the major department. With the consent of the department, majors in mathematics and the natural sciences may include as related work introductory courses in mathematics, the natural sciences, and science education. A minimum of four semester courses of related work is required, two semester courses of which must be in laboratory science. Courses fulfilling the uniform course requirements may also be counted toward the requirements in major and related work; two uniform course requirements may not be satisfied with the same course.

Elective Courses. In addition to the required uniform courses, physical education activity courses, and the major and related work described above, other courses must be elected to make a combined total of semester-hours and semester-courses as specified and explained in the section on pp. 6-7 concerning "Credit Requirements."

Students whose programs of study permit may select a maximum of six semester-courses in engineering, forestry, law, medical science, or nursing. The courses elected in these subjects must be approved by the major department and by the student's academic dean.

Credit Requirements: Bachelor of Arts and Bachelor of Science

Effective September, 1969, academic credit is expressed in terms of semester-courses satisfactorily completed rather than semester-hours and quality-point ratios. As a result, the permanent academic records of students in the Classes of 1970, 1971, and 1972, including transfer students and former Duke students readmitted to the colleges, reflect (*a*) courses taken before September, 1969, expressed in terms of semester-hours, together with letter grades, quality points, and quality-point ratios; and (*b*) courses taken after September, 1969, expressed in terms of semester-courses, double-courses, and half-courses, together with letter grades earned for each.

Because of the changes explained above, students in the Classes of 1970, 1971, and 1972 are required to complete a *combination* of semester-hours and semester-courses (or their equivalent in terms of double-courses and half-courses) according to the following table:

Students in the Classes of 1970, 1971, and 1972, including transfers and former students returning to Duke, who, by September 1, 1969

Have received credit, exclusive of required hours in Physical Education, for:	Must complete the following number of courses:
22-24	28 semester-courses
25-27	27
28-30	26
31-33	25
34-36	24
37-39	23
40-42	22
43-45	21
*46-54	20
55-57	19
58-60	18
61-63	17
64-66	16
67-69	15
70-72	14
73-75	13
*76-84	12
85-87	11
88-90	10
91-93	9
94-96	8
97-99	7
100-102	6
103-105	5
106-108	4

*Reflects the fact that, effective September, 1970, the normal course load for all students will be four semester-courses.

Grade-Average Requirements for Graduation: Bachelor of Arts and Bachelor of Science

In addition to completing an approved curriculum, a student in the Class of 1970, 1971, or 1972, including a transfer or former student readmitted to Duke, must earn at least a *C*— average on the combined total of semester-hours and semester-courses *undertaken* as an undergraduate student. The academic work of the senior year, however, must average at least a *C*.

Residence Requirements: Bachelor of Arts and Bachelor of Science

Normal and Maximum Periods. Four academic years, that is, eight semesters, in residence is the normal amount of time a student may take

to earn either the A.B. or B.S. degree. This period may be extended by one or two semesters when, in the opinion of a student's academic dean, legitimate reasons underlie the student's failure to be graduated in eight semesters, and reasonable grounds exist for expecting that such extension will enable the student to complete all remaining requirements for graduation. A student will not be permitted more than five academic years, that is, ten semesters, in residence in order to be graduated, unless he has previously been enrolled as a special student.

Minimum Period. At least sixteen courses including the courses of the final two semesters must be completed satisfactorily at Duke. A student who meets this requirement, but who lacks one course in final fulfillment of degree requirements may take this work in another institution of approved standing, provided the course is approved by his major adviser and academic dean.

Former students of The Woman's College who have been out of college for six or more years may take up to ten courses or thirty semester-hours of work in another institution of approved standing in final fulfillment of requirements, providing that (1) she was in good standing when she withdrew from Duke; (2) she proposes *in advance* a plan which ensures that the work to be taken elsewhere will be comparable to the work required at Duke; (3) she demonstrates that to return to Duke to complete the work for the degree would be either impossible or occasion serious hardship; and (4) she is prepared to take Duke examinations on any courses taken elsewhere if required by the department concerned.

Degree Requirements for Students in the Class of 1973

Starting with the academic year 1969-70, a new undergraduate curriculum goes into effect for students entering Trinity College and The Womans' College. Within this curriculum, two academic programs, each leading to the Bachelor of Arts and the Bachelor of Science degrees, have been established. The requirements of each program—Program I and Program II—are described below. These requirements relate to curriculum, credits, grade-average, and residence, and are applicable to both the Bachelor of Arts and Bachelor of Science degrees.

Program I Curricular Requirements

Proficiency in English Composition. Each student is required either to (1) demonstrate his ability to write good English by presenting a score of 700 or higher on the CEEB English Composition Achievement Test, or (2) pass a semester-course (English 1) in English composition in the first semester of the freshman year. A student presenting a 700 or higher score on the CEEB Test satisfies the English composition proficiency requirement for graduation, but does not receive course credit for English 1.

Proficiency in Foreign Language. This requirement is the same as that required of students in the Classes of 1970, 1971, and 1972 as described on pages 2-5 above, and may be satisfied by completion of courses or satisfactory performance on proficiency tests as explained in that reference.

Distribution of Courses. A student in Program I is required to distribute a portion of his course work among the three divisions into which the academic departments of the University are grouped. The three divisions, and the academic departments within each, are as follows:

Humanities: Art, Classical Studies (including Greek and Latin), English, Germanic Languages and Literature, Music, Philosophy, Religion, Romance Languages (including French, Italian, Portuguese, and Spanish), Slavic Languages and Literatures (including Russian).

Natural sciences and mathematics: Botany, Chemistry, Geology, Mathematics, Physics, Zoology.

Social Sciences: Business Administration, Economics, Education, Health and Physical Education (Woman's College), History, Political Science, Psychology, Sociology, and Anthropology.

The number of semester-courses which a student must pass in each division is as follows:

First or Major Division. By majoring or concentrating in a single department or in an approved interdepartmental program and satisfying the course requirements thereby established, a student will automatically complete courses in one of the three divisions and meet the distributional requirements of the "first" or "major" division.

Second Division. A student must pass at least four semester-courses in a second division of his own choice. At least two of the four courses must be at the advanced level. Normally advanced-level courses are numbered in the 100 and 200 series, although there is some variation among the departments. To satisfy this requirement, a student may select all four courses from a single department, or he may distribute the courses among two or more departments. In either case, however, he must meet departmental requirements for admission to courses selected, such as having necessary prerequisites, and in the case of hyphenated courses, must complete both courses in order to obtain credit for either.

Third Division. A student must pass at least two semester-courses in a third division of his choice. The courses may be at the introductory or advanced level, and may be taken in one department or distributed between two departments. The student, however, must satisfy departmental requirements for admission to courses selected, as explained in the preceding paragraph.

Skill Courses. The courses selected in each of the three divisions must be those in which the essential subject-matter and substance of the discipline are presented; thus no introductory-skill courses may be used to satisfy distributional requirements. See the following list of skill courses.

Skill Courses That Do Not Satisfy Distributional Requirements of Program I

Department	*Courses*
Art	53-54, 55, 56; 155, 156; 157, 158; 159, 160
Chinese	101-102 (Ch. Hill); 131, 132; 133, 134
Classical Studies	Greek 1-2; 63-64
	Latin 1-2; 63-64
Education	105, 106, 107, 108, 151, 152, 153, 154, 161, 162, 195, 196, 201, 215, 216, 225, 226, 236, 237, 239, 241, 246, 266, 276.
English	1; 51, 65-66; 101; 103-104; 121, 122; 151
Germanic Languages and Literature	1-2; 63-64; 105, 117, 118
Health and Physical Education (Women)	P.E. 102, 103, 105-106, 117, 119S, 120, 132, 133, 181, 182, 185
	H.E. 101-102, 134
Hindi-Urdu	181, 182; 183, 184
Japanese	151, 152; 153, 154
Music	5-6; 15; 57-58; 145-146; 151; 152; 153; 154; Applied Music
Psychology	117
Romance Languages	French 1-2; 63-64; 97, 98; 181, 182
	Italian 1-2; 63-64; 181
	Portuguese 181
	Spanish 1-2; 63-64; 97; 181, 182
Slavic Languages and Literatures	1-2; 63-64

Learning Experiences. Students entering The Woman's College and Trinity College in September, 1969, are required to have the following small-group and independent learning experiences, as those experiences are defined below:

Freshman and sophomore years.

1. A seminar in one semester of the freshman or sophomore year, or
2. Two preceptorials, discussion sections, or tutorials, or a combination of any two of these, to be taken at some time during the freshman and/or sophomore years.

Junior and senior years.

1. A combination of seminars or independent study with credit equal to at least two semester-courses, or
2. A thesis or an independent project at some time during the student's junior or senior year for which he would receive credit for two semester-courses.

The above requirements are the minimum for both the A.B. and B.S. degrees. Although a student is not prohibited from enrolling in addi-

tional small-group sections or courses or in independent study beyond the required minimum, preference is given to those needing such learning experiences to satisfy the above requirements when sections or courses are filled.

Small-Group Learning Experiences. To supplement the normal classroom and large lecture methods of instruction, four types of small-group learning experiences are offered:

Seminar: A course, normally of twelve to fifteen students, in which instead of hearing lectures, the student engages in discussion, develops skills, refines judgment, and has his ideas challenged.

Preceptorial: Discussion between an instructor and no more than twelve students. The preceptorial is an additional and optional unit attached to a regular course. It allows a student to carry his interest and learning in a particular subject further than that required in the regular class. If a regular class normally meets three times a week, the preceptorial would be a fourth one-hour meeting.

Discussion section: Discussion between approximately ten students and an instructor in a section that is part of a regular course. A discussion group is an integral part of a course in which lectures are given to large groups. It is distinguished from a preceptorial in that every student in the course participates in a discussion section, whereas the preceptorial offers opportunity for intensive study additional to that required in the regular course.

Tutorial: A meeting between one instructor and one to three students independent of any other course.

Courses or sections of courses offering the above small-group experiences are designated *S* (for seminar), *P* (for preceptorial), *D* (for discussion section), or *T* (for tutorial).

Independent Study, Including Independent Projects and Theses. Independent study may take a variety of forms, depending upon the subject-matter and research methods of the several disciplines, as well as upon the interests of students and the professors who supervise their independent work. In some instances, it may consist of extensive reading and research in the literature of a discipline, followed by the writing of a substantial paper. In other cases, as in the natural sciences, a laboratory research project may be undertaken. In still other instances, a student may write or produce a play or compose a novel; or he may plan and conduct a project in field research.

A special form of independent study, particularly for departmental majors, is the preparation of a thesis or the completion of a major independent project in the junior, but especially in the senior year. Again, the precise nature of the thesis or independent project will vary with the subject-matter and research methods of the discipline in which it is undertaken. When undertaken in the senior year as part of a program of

study in a student's major department or program of interdisciplinary concentration, it might serve any one of a number of valid educational purposes. For some students it would provide an opportunity for integrating their understanding of the disciplines in which they majored. For others it would permit more intensive consideration or specific topics previously encountered but insufficiently explored. And for still others, it would be the occasion for truly original research and the development of new insights and knowledge within the disciplines.

Concentration. Each student is expected to acquire some mastery of a particular discipline or interdisciplinary area. This result is obtained by requiring that he concentrate a portion of his studies in a single department (the major) or in an approved interdepartmental program. The requirements for each type of concentration are as follows:

Major. A major consists of at least five courses in one department above the introductory level. A department may not require a student for the A.B. degree to take more than eight courses above the introductory level in the major, though the student may elect to do so. A department may not require a student for the B.S. degree to take more than ten courses above the introductory level in the major, though the student may elect to do so. Foreign language departments may at their discretion begin the major after the elementary and intermediate courses. Otherwise, introductory courses are considered to occupy one-quarter of a student's time for the first year of study in a department. More intensive major programs may be offered for the student's election.

Interdepartmental Concentration. Interdepartmental concentration consists of at least three courses beyond the introductory level in each of two or more departments, and requires the approval of the directors of undergraduate studies in the departments concerned.

Advanced Work. Of the thirty-two semester-courses required for graduation, at least twelve must be at the advanced level. Normally, advanced-level courses are numbered in the 100 and 200 series, although there is some variation in this respect among the several departments. This requirement may be satisfied by passing advanced-level courses in any of the three divisions of learning described above.

Physical Activity. All students are required to complete two years of approved physical activity unless excused for medical reasons. This requirement is normally met by satisfactory completion of four courses in physical activity offered by the Departments of Health and Physical Education. In special cases an alternate form of physical activity may be approved by those departments as satisfying the requirement. Each student must begin to fulfill the requirement in his freshman year and, ordinarily, to complete it by the end of the sophomore year. Letter grades, however, are not considered in calculating grade averages for purposes

of graduation, continuation in college, and honors. Nor do physical education courses or alternate forms of physical activity count among the thirty-two courses needed for graduation. Nevertheless, each student must complete this requirement in order to be graduated.

Military Science Courses. No more than four courses in the military sciences may be counted among the thirty-two courses required for graduation.

Program I Credit Requirements

To be graduated with either the Bachelor of Arts or Bachelor of Science degree, a student must pass at least thirty-two semester-courses, or their equivalent in terms of half-courses and double-courses, in an approved curriculum.

Program I Grade-Average Requirements for Graduation

Of the thirty-two semester courses required for graduation, twenty-two or their equivalent in terms of double-courses and half-courses, must be passed with grades of *C*— or better.

For purposes of this requirement, the average of grades received in two half-courses will be the equivalent of a grade in a semester-course; and the grade in a double-course will count as two semester-course grades of the same quality.

Program I Residence Requirements

The residence requirements for students in Program I are the same as those for students in the Classes of 1970, 1971, and 1972 as set forth on page 13.

Program II: Nature and Purpose

The second program leading to the Bachelor of Arts and Bachelor of Science degree is called Program II. In general, this program offers the student who has a special interest and talent in a single field or an unusual combination of interests and talents in several fields, an opportunity to plan, with the counsel of a single department or an interdepartmental committee, a special curriculum or plan of academic and related work adapted to the exceptional qualities which the student possesses. Once accepted into Program II, the student and his adviser design a plan of work for the whole or remainder of the student's college career. Together they assess his background, needs and ambitions, and evaluate the resources of the University and those outside it as means of satisfying those ambitions. For example, they consider what academic courses would be useful, but they also consider other options. Thus, a full semester or year

of independent study equivalent to a normal course-load under Program I might be agreed upon; or a year-long work-study program off-campus or a period of residence and study abroad, might seem most pertinent. Regardless of the features of a particular plan of work under Program II, each must be tailored to the special interests and talents of the student for whom it is designed.

Once the plan of work has been approved by the appropriate department or interdepartmental committee, it is presented to the supervisory Committee on Program II of the Undergraduate Faculty Council for approval. Upon endorsement by that committee, it becomes an obligation assumed by the student, though it may later be modified with the approval of the department or interdepartmental committee and of the Committee on Program II. A description of the plan is prepared and is sent to the student's academic dean; and yearly check-sheets showing the student's progress in achieving the plan are submitted to the dean.

Program II: Admission

A student interested in being considered for Program II should confer first with his academic dean about his eligibility for the Program; if he appears eligible, he will be referred to the director of undergraduate studies in the department closest to his interest, or in special cases, to the chairman of an interdepartmental program. The director (or chairman), in consultation with the student, will decide whether Program II is appropriate for the student, that is, whether the department will accept him as a Program II student. If he is accepted by the department and his plan of work is approved by the Committee on Program II of the faculty, he is formally designated a Program II student.

Normally, a student will be accepted into Program II only after he has been in residence at Duke for one or two semesters and has shown during that period that he possesses the necessary qualifications for admission. Nevertheless, a freshman who believes that he qualifies for Program II and desires to be admitted in his first semester at Duke, is invited to write the dean of freshmen of his college during the summer months preceding matriculation, providing him with a complete statement of his qualifications and plans as a prospective Program II student.

Because of the special qualifications for admission to Program II, as well as the great freedom permitted a student in selecting courses in Program I, it is anticipated that only a few students will enter Program II each year. Until accepted into Program II, a student should register for courses and satisfy curricular requirements as a Program I student. Upon acceptance into Program II, a student is relieved of most, but not all, requirements expected of Program I students. (See section below.) Should he leave Program II for any reason, he assumes all requirements of Program I.

Program II: General Requirements

Apart from the requirements arising from his approved plan of work, a Program II student must satisfy certain general requirements which are also applicable to students in Program I. These requirements have been set forth in the foregoing explanation of Program I, under the following headings: Credit Requirements, see pages 6-7 above; Physical Activity Requirement, see page 12 above; Limitation Regarding Military Science Courses, see page 13 above; Grade Requirement for Graduation, see page 13 above; Residence Requirements, see page 13 above. In this case, while the normal and maximum periods of residence explained on page 13 are applicable to students in Program II, the requirement relating to the last two semesters is subject to some adjustment if the student's approved plan of work necessitates his being absent from the University during a portion of the senior year.

The School of Engineering

Academic programs in this School are designed for students who desire to major in one of the following fields: biomedical, civil, electrical, or mechanical engineering, or in a selected interdisciplinary field such as engineering mechanics, energy conversion, materials, and systems and controls.

In addition to majoring in one of the above fields, a student must complete courses in other disciplines and must satisfy certain designated requirements relating to quality of academic work and residence in the School. A portion of the curricular and credit requirements for the Bachelor of Science in Engineering degree may be satisfied through Advanced Placement Program of the CEEB undertaken before enrollment in the School.

Starting with the academic year 1969-70 new curriculum and new degree requirements are applicable to entering students. For students in the Classes of 1970, 1971, and 1972 the basic degree programs in effect at the time of their initial enrollments continue to apply, although certain aspects of the new curriculum and certain modifications of degree requirements also are applicable.

*Degree Requirements for Students in the Classes of 1970, 1971, and 1972**

For graduation with a bachelor's degree in engineering, a minimum of

*A maximum of six semester hours of junior or senior level air science or naval science course work may be counted in satisfying the minimum requirements of 132 hours for a baccalaureate degree in engineering. These six hours may not be substituted for any of the requirements in English, social sciences or history, or humanities, or for any electives in social sciences, history, or humanities. All other credits earned in air science or naval science are taken in addition to the minimum program.

132 semester hours of course work must be completed as specified in the *Bulletin of the School of Engineering*, with the exceptions noted below:

Transition Program of Study in Biomedical Engineering

Senior Year, Class of 1970

Fall 1969	*s.h.*	*Spring 1970*	*s.h.*
Social Science, History, or Humanities	4	Social Science, History, or Humanities	4
Egr. 133—Heat Transfer or Egr. 143—Fluid Mechanics	2	Egr. 163—Fields	3
B.M.E. 201—Biomed. Egr. I	4	B.M.E. 202—Biomed. Egr. II	4
Egr. Elective	3	Elective	4
Elective	4		—
	17		15

Junior Year, Class of 1971

Fall 1969	*s.h.*	*Spring 1970*	*s.h.*
Social Science, History, or Humanities	4	Egr. 113—Intro. Electric Systems II	3
Math. 112—Appl. Math. Analysis II	4	Egr. 123—Dynamics	3
Chem. 151—Organic Chem.	4	Egr. 101—Thermodynamics	3
Biol. 1—Gen. Biology	4	Chem. 152—Organic Chem.	4
	—	Biol. 2—Gen. Biology	4
	16		—
			17

Transition Program in Civil Engineering

Senior Year, Class of 1970

Fall 1969	*s.h.*	*Spring 1970*	*s.h.*
Social Science, History, or Humanities	3	Social Science, History, or Humanities	4
C.E. 118—Materials	2	C.E. 116—Transportation	3
C.E. 124—Sanitary Engr.	3	C.E. 134—Struct. Design II	3
C.E. 133—Structural Design I	3	C.E. Elective	3
C.E. 139—Soil Mechanics	3	Elective	3
Elective	3		—
	—		16
	17		

Junior Year, Class of 1971

Fall 1969	*s.h.*	*Spring 1970*	*s.h.*
Social Science, History, or Humanities	3	Social Science, History, or Humanities	4
Egr. 101—Thermodynamics	3	Egr. 113—Electric Sys. II	
Egr. 123—Dynamics	3	or 133—Heat Transfer	3 or 2
Egr. 143—Fluid Mechanics	2	C.E. 96—Measurements	3
C.E. 131—Structural Mech. I	3	C.E. 123 + 1—Hydraulic Engrg.	4
Elective	3	Elective	3
	17		17/16

Transition Program of Study in Electrical Engineering

Senior Year, Class of 1970

Fall 1969	*s.h.*	*Spring 1970*	*s.h.*
Social Science, History, or Humanities	4	Social Science, History, or Humanities	4
E.E. 162—Electromechanical Energy Conversion	2	E.E. 167—Design Colloquium	2
E.E. 163—Physical Electronics	3	E.E. Elective	3
E.E. 164—Electromagnetic Fields and Waves	4	E.E. Elective	3
Approved Elective	3/4	Approved Elective	3/4
	16/17		15/16

Junior Year, Class of 1971

Fall 1969	*s.h.*	*Spring 1970*	*s.h.*
Social Science, History, or Humanities	4	Social Science, History, or Humanities	4
E. 113—Introd. Electric Systems II	3	E. 101—Thermodynamics	3
E. 123—Dynamics	3	E. 163—Fields	3
Math. Elec. beyond 111	4	Math. Elec. beyond 111	4
Physics 161—Modern Physics	4	E.E. 161—Electronics and Signals	3
	18		17

Transition Program of Study in Mechanical Engineering

Senior Year, Class of 1970

Fall 1969	*s.h.*	*Spring 1970*	*s.h.*
M.E. 122—Transport Phenomena	4	Social Science, History, or Humanities	4
M.E. 136—Response of Systems	4	M.E. 134—Mechanical Design II	2
M.E. Elective	4	M.E. Elective	3
Approved Elective	4	Approved Elective	3
	—	Approved Elective	4
	16		—
			16

Junior Year, Class of 1971

Fall 1969	*s.h.*	*Spring 1970*	*s.h.*
E. 123—Dynamics	3	Social Science, History, or Humanities	4
E. 101—Thermodynamics	3	E. 113—Introductory Electric Systems II	3
E. 143—Fluid Mechanics	2	E. 133—Heat Transfer	2
Math. Elec. beyond 111	4	M.E. 102—Thermo II	4
M.E. 133—Mechan. Design I	4	Nat. Sci. Elective	4
	—		—
	16		17

Transition Program of Study in Engineering

Sophomore Year, Class of 1972

Fall 1969	*s.h.*	*Spring 1970*	*s.h.*
E. 73—Mechanics of Deformable Bodies	3	P. E.	1
E. 83—Structure & Properties of Solids	3	E. 63—Introductroy Electric Systems I	4
Social Science, History, or Humanities	3 or 4	Social Science, History, or Humanities	4
Math. 63—Intermed. Calculus	3 or 4	Math. 111—Appl. Math. Anal. I	4
Physics 51—General Physics	4	Physics 52—General Physics	4
P. E.	1		—
	—		17
	17/19		

Degree Requirements for Students in the Class of 1973

Starting with the academic year 1969-70, a new undergraduate curriculum is available to students entering the School of Engineering.

The new academic program is measured in terms of semester-courses (including half-courses and double-courses) satisfactorily completed, with a normal academic load of four† courses per semester and 32 courses required for graduation.

Freshman Year, Class of 1973

Fall 1969	*s.h.*	*Spring 1970*	*s.h.*
Chemistry 1	1	Chemistry 2 or Physics 51*	1
English 1	1	Math. 32	1
Math. 31	1	Elective*	1
Elective*	1	Elective*	1
Physical Education	—	Physical Education	—

For *Civil Engineering*—include at least the equivalent of one full-course in engineering and one full-course in the social sciences and humanities.

For *Electrical Engineering*—include at least the equivalent of one full-course in the social sciences and humanities; Physics 51 in spring semester.

For *Mechanical Engineering*—one of several courses in digital computation is advised for those without this experience; Physics 51 required within first two years.

For *Biomedical Engineering*—either Zoology 11 or Mathematics 51 (engineering section) in fall semester; Physics 51, Chemistry 2, and general elective in spring semester.

*Each student is encouraged to plan a program designed for his individual needs. His faculty adviser will assist him. The following preliminary recommendations are for guidance, relative to possible eventual choice of a major, but are not mandatory:

†Students taking Air Science or Naval Science may need to schedule a course in military science as supplement to the normal load.

Academic Information and Regulations

Registration

Preregistration

All new undergraduate students preregister by mail during the summer preceding matriculation for their first college semester. An *Academic Guide* and preliminary registration materials are sent to all entering freshmen in June. By becoming familiar with these materials the student can plan an academic program. To accomplish preregistration, course cards sent to each student are filled out and returned to the office of the dean of the appropriate college. It is understood, of course, that entering freshmen may change some course selections after they have received counsel during Freshman Week.

Continuing students are expected to preregister at specified times for each successive semester. Prior to preregistration each student receives by mail special instructions and registration materials. He prepares a trial course program and presents it at an appointed time to his adviser or to a faculty member designated to assist him in reviewing it. This card is then presented at registration.

Any student who contemplates teaching in elementary or secondary schools should consult an appropriate member of the Department of

Education prior to each preregistration period to ensure that he is meeting requirements for certification (many states have unique requirements) and that he will have a place reserved in the student teaching program.

Those who preregister at a time later than the day specified in the University calendar are subject to a $10.00 fine. Students who fail to preregister are automatically withdrawn and must apply for readmission if they wish to return; they also forfeit their $25.00 registration deposit unless they indicate at the time of preregistration their intention not to continue in the University the following semester.

Semester Opening and Registration

Preregistered students are expected to report to their college office each semester by 6 p.m. on Registration Day. Failure to report entails a loss of the registration deposit ($25.00) and registration in courses. An official enrollment is required for admission to any class.

Changes in the schedule for which a student is preregistered can be made on Registration Day or during the first week of classes. Course changes initiated by the student entail a fee of $1.00 per change.

Course Changes After Classes Begin

During the week following Registration Day, courses may be dropped and added provided certain procedures are followed. To drop or add a course during this period, a student obtains an appropriate card from his dean's office and submits the card, signed by the dean, to the Central Records Office. A course is not officially dropped or added until the Central Records Office receives the appropriate card signed by the dean.

After the first week of classes, courses may not be added; nor may courses be dropped without penalty except for special reasons approved by the dean. A student may drop a course without penalty in the early weeks of the semester if he is clearly carrying a course overload. For freshmen this period extends to the time when six-weeks' grades are assigned; for upperclassmen it extends to November 1 in the fall semester and March 1 in the spring semester. Factors such as poor health or necessary outside work are also taken into consideration in assessing permissible withdrawal from courses without penalty. A *W* is entered opposite the course on the permanent record in lieu of a grade in all cases where withdrawal without penalty is approved. After the above dates, withdrawal will ordinarily incur a penalty *F*. A course discontinued at any time without approval will be assigned an *F*.

Course Load and Eligibility for Courses

During the academic year 1969-70, the course load of a student in the Class of 1970, 1971, or 1972 normally consists of five semester-courses each semester exclusive of physical education. A student in the Class of 1970 may take as few as four or as many as six courses each semester if either number will enable him to complete requirements for graduation by June, 1970. Starting in 1970-71, the normal course load each semester for a student in the Class of 1971 or 1972 is four semester-courses; he may take five courses, or, with the approval of his academic dean, six courses in any semester.

For a student in the Class of 1973, the normal course load each semester is four semester-courses. To take more than five semester-courses in any semester, he must have the approval of his academic dean.

No student may take more than six courses in any semester; nor may he take fewer than four courses without permission of his academic dean.

Ordinarily, a senior student may not elect for credit toward graduation any courses open primarily to freshmen. Juniors may elect only one such course. The Graduate School rules provide that juniors may enroll in a 200 level course if they have earned an over-all *B* average and have obtained the written consent of the instructor, as well as that of the director of graduate studies in the department concerned.

Course Audit

With the written consent of the instructor, a full-time, degree student is allowed to audit one or more courses in addition to the normal program. With the consent of the instructor and the registrar, alumni may audit undergraduate courses at the usual auditing fee. After the first week of classes in any semester, no student classified as an auditor in a particular course may take the course for credit, and no student taking a course for credit may change classification to an auditor. A student may not repeat for credit any course he has previously audited. Auditors submit no daily work, take no examinations, and receive no credit for courses.

Waiver of Physical Education Requirement

A student who has completed a full calendar year or more of active duty in the military forces of the United States may be excused from one semester-course in required physical education for each six months of such active duty.

Special Curricular Opportunities

Reading-Out Introductory Courses

Students of demonstrated academic ability may be granted the option of "reading-out" of an introductory or prerequisite course in order to allow them to advance at their own pace to upper-level work. No course credit may be earned by "reading-out." This opportunity provides for a richer program for the student who has few places in his curriculum for electives. Any student interested in reading during the summer to bypass an introductory or prerequisite course must be recommended by his dean and secure the permission of the department concerned. Reading for a course and auditing are mutually exclusive procedures. A proposed program of reading should be approved by the director of undergraduate studies in the department in which the work will be done. On passing a qualifying examination prepared by the department a student may be certified for advanced course work in the area. On completion of an advanced course, an entry will be made on his permanent record that he has passed a qualifying examination but no course credit is awarded. Interested students should request further information from their respective dean's offices.

Independent Study

Independent study enables a student to pursue individual research and reading in a field of special interest subject to the supervision of a member of the faculty. A student, with approval of his adviser, the instructor, and the director of undergraduate studies of the instructor's department, may enroll in independent study for any semester of the student's enrollment at Duke.

Graduation With Distinction

Programs featuring independent study and other honors opportunities are available under the title *Graduation with Distinction* in the majority of the academic departments. Although the details and requirements of the program vary from department to department, certain general requirements are uniform. Departments participating may invite students at the end of the sophomore or junior year to enter the Graduation with Distinction Program. To be eligible, students must show promise of achieving by the time of graduation at least a *B* average in the major field. After participation in a seminar in the junior or senior year, and/or a directed course of reading, laboratory research, or other independent study, the student must embody the results of his individual research and study in a distinguished piece of writing. The student's achievement, in-

cluding the paper, is assessed by a departmental committee. If the student has at least a *B* average in the major field, the committee may recommend that the student be Graduated with Distinction in his major field. Interested students should consult the director of undergraduate studies in his department.

Distinguished Professor Seminars

Interdisciplinary one-semester seminars of restricted enrollment offered to upperclassmen will be led by senior members of the faculty, usually holders of named chairs. Professors and topics are announced under the title *University Courses*. Because of their scope, the seminars lie outside any particular major though a department may, at its discretion, accept one or more of them as related work. Juniors and seniors with approximately a *B* average who meet prerequisites listed for particular seminars may apply for a seminar through an academic dean of their college. Preference is given to juniors and to those not enrolled in a senior honors seminar.

Declaration and Change of Major

A student may declare his major with his academic dean as early as the second semester of the freshman year; he must choose a major well before pre-registration in the second semester of the sophomore year. After declaring a major, the student consults a faculty adviser in his major department each semester during an announced preregistration period.

Majors once declared may be changed by consulting the appropriate academic dean and registering the change in his office.

Class Attendance and Excused Absences

Responsibility for class attendance rests with the individual student. He is expected to attend classes regularly and punctually and must accept the consequences of failure to attend. An instructor is privileged to refer to the dean of the appropriate college for suitable action students who in his opinion are causing their work or that of the class to suffer because of absences. When excessive absences result in a student's failure to carry a normal course load, the dean, after a conference with the student, will determine whether the student may continue his enrollment in the college.

Absences from required classes and tests ordinarily are excused only for illness certified by a proper medical official of the University and for

authorized representation of the University in out-of-town events. Officials in charge of groups representing the University in such events are required to submit names of students to be excused to the appropriate dean's office forty-eight hours before their absences are to begin.

Absences from final examinations are excused by the appropriate academic dean only in very exceptional circumstances, such as illness certified by a medical official of the University or other condition beyond the control of the student. A student who misses a final examination must notify his dean within forty-eight hours after the time of the scheduled examination. Failure to so notify and to present an acceptable reason for his absence from the examination will result in the student's receiving an *F* in the course.

Credits

The unit of credit for academic work undertaken in the colleges is the semester-course, which generally consists of three to four hours of instruction time each week of the semester. Half-courses and double-courses are also recognized.

Seniors who at the beginning of a semester lack no more than three semester-courses for the fulfillment of the requirements for the A.B. or B.S. degree may enroll, with permission of the dean of the Graduate School, in graduate courses for a maximum total program of five semester-courses.

Advanced Placement Program Credit

Any student who has earned a score of three or higher on an Advanced Placement Program (APP) examination of the CEEB and is approved for placement by the appropriate department in a sophomore-level course or above may be considered for course credit in the following subjects: botany, chemistry, English, French, German, history, Latin, mathematics, physics, Spanish, and zoology. For those presenting scores of four or five, the award of credit ordinarily will be made automatically upon matriculation; for those presenting scores of three, it will be determined with the approval of the University department concerned no earlier than at the end of the first semester. Course credit may be granted for one or two semester-courses in each subject area in which examination is offered in the Advanced Placement Program.

Transfer Credit

Transfer credit is evaluated from regionally accredited, degree-granting institutions. Courses taken away from Duke in which grades of less

than *C* have been earned are not acceptable for transfer credit. Credit for work completed at other institutions will be determined in relation to the curriculum requirements of the college in which the student enrolls at Duke.

Credit for courses in science, mathematics, or foreign language offered for advanced standing in any of the undergraduate colleges by a transfer student from a junior college will be evaluated by the departments concerned.

Students who transfer to Duke may receive credit for a maximum of two years of work at other institutions of approved standing. No credit is given for work completed by correspondence, and credit for no more than two semester-courses is allowed for extension courses.

Grading

Final grades on performance in academic work are sent to students and parents, or guardians, after the examinations at the end of each semester. In addition six-weeks advisory grade reports for freshmen are mailed each semester.

Passing Grades

Passing grades are *A*, exceptional; *B*, superior; *C*, average; and *D*, low pass. A passing grade may be modified by a plus (+) or a minus (−).

Failing Grades

A grade of *F* indicates that the student has failed the course and that in order to receive credit for the course he must reregister for the course and repeat the work in class.

Pass-Fail Option for Elective Courses

With the consent of the instructor, a junior or senior may choose to be graded on a pass-fail basis in one elective non-major course each semester. A student accepted on this basis completes all the work of the course but receives either a pass (*P*) or fail (*U*) grade in lieu of a standard grade. A pass grade may not subsequently be converted to a regular letter grade nor may the course be retaken on a regular credit basis. After the first week of classes in any semester, no student classified as pass-fail in a particular course may change to regular registration and no student in regular registration may change classification to pass-fail.

Grades When Absent From Final Examintion

In all cases in which the student is absent from a final examination, he receives an *X* instead of a final grade. If he does not present an acceptable explanation for his absence to the appropriate dean's office within forty-eight hours after the scheduled time for the examination, the *X* is converted to an *F*. Only the academic dean is authorized to excuse a student from a final examination. If the absence is excused, the student arranges with the dean and the instructor for a make-up examination. An *X* not cleared by the end of the semester following the examination missed is converted to an *F*.

Grades For Incomplete Work

If because of illness or other emergency a student's work in a course is incomplete, he may receive an *I* for the course instead of a final grade. Incomplete courses must be completed before the close of the succeeding semester; otherwise, the *I* is converted into an *F*. Seniors are expected to complete all courses before graduation. In case a student whose work is incomplete is also absent from the final examination, he receives an *X* for the course.

For purposes of satisfying continuation requirements (see pages 27-28), an *I* is counted as a failing grade. If a student desires to satisfy continuation requirements by completing a course in which he has received an *I*, he must complete the course in time for a final grade to be submitted to the Registrar no later than the day preceding Registration Day for the spring semester or for the first term of the summer session. In the case of an *I* received in the spring semester, this requirement applies whether or not the student plans to attend summer school.

Continuation Requirements

A student must achieve a satisfactory record of academic performance each semester in order to continue his enrollment in his college. For the academic year 1969-70, the requirements in this respect for students in the Classes of 1970, 1971, and 1972 vary slightly from those applicable to students in the Class of 1973. Starting in 1970-71, the requirements will be the same for all students.

Students in the Classes of 1970, 1971, and 1972

During 1969-70, students in these classes must pass each semester at least three semester-courses, or their equivalent in terms of double-courses and half-courses, in order to continue their enrollment. In addition, a student may be dismissed temporarily or permanently by the dean

of his college for failure to make satisfactory progress toward graduation. This latter provision is explained in the statement below regarding requirements for the Class of 1973.

In 1970-71, when four semester-courses each semester are the normal course load for members of the Classes of 1971 and 1972, as well as for members of the Classes of 1973 and 1974, the continuation requirements are those stated below for members of the Class of 1973.

Students in the Class of 1973

For freshmen entering the colleges in the fall of 1969, the following regulation specifies the conditions under which they may be withdrawn for reasons of poor academic performance: A student who fails three or more courses in the first semester of the freshman year or who fails two or more courses in any subsequent semester must leave his college for at least two semesters. The double summer session may be counted as a semester. The student's return must be approved by the dean of his college. If the student thereafter fails two or more courses in a semester he will be permanently dismissed from the college. In addition, a student may be dismissed temporarily or permanently by the dean of his college for failing to make satisfactory progress toward graduation. Any student excluded from his college under the provisions of this regulation may at his request have his case reviewed by a committee on academic standards of the Undergraduate Faculty Council. The provision in the regulation relating to a student's failure to make satisfactory progress toward graduation refers, for example, to the situation in which his cumulative grade record for two or more semesters is of such poor quality as to create serious doubt about his ability to satisfy graduation requirements within the normal period of eight semesters. In such circumstances, the student may be required to leave his college, either temporarily in order to remedy the conditions that explain his poor performance, or permanently when such action appears in the best interest of both the student and the University. A student who is twice withdrawn in these circumstances may not be readmitted to the college.

Commencement

Degrees are awarded in June at commencement to those who have completed requirements at the end of either regular semester of the academic year. They are awarded at the end of the summer to students who complete degree requirements in a summer session.

Eligibility for Academic Honors

Dean's List

In recognition of academic achievement, students who earn a *B* average or higher on a semester's work of not less than the normal academic load are placed on the Dean's List.

Class Honors

To be eligible for Class Honors a student must earn, during the year, credit for at least the normal academic load permitted by the college in which he is registered. Students in the freshman, sophomore, and junior classes who earn a *B*+ average on all work for the year are eligible for Class Honors.

Graduation Honors

To be eligible for consideration for Graduation Honors a student must have completed a minimum of three years of study at Duke. Students who earn an average of at least a *B*+ are recommended for a degree *magna cum laude*. Those who earn an average of *A*— are recommended for a degree *summa cum laude*.

Changes in Status

Withdrawal and Readmission

A student who wishes to withdraw from college must give official notification to his academic dean. Withdrawals at student initiative prior to the Christmas recess in the fall term or prior to April 15 in the spring term are coded as voluntary, and a *W* is entered in lieu of a grade for each course. Voluntary withdrawals after these dates are permitted only in the event of emergencies beyond the control of the student.

Applications for readmission are made to the Undergraduate Admissions Office. Such applications are reviewed by officers of the college to which the student applies. They are reviewed on the basis of several criteria including his academic record at Duke and prospects of completing requirements for graduation; his citizenship record at Duke and evidence of increasing maturity and self-discipline; the degree of success attendant upon the activities in which he has engaged while away from Duke; and, finally, his relative standing among the group of students applying for readmission. Following the evaluation, a recommendation is

made by the college officers with regard to readmission. The Admissions Office then notifies the applicant of the action taken.

Applications for readmission must be submitted by December 1 for admission in February, and by August 1 for admission in September. For readmission to The Woman's College in September, however, it is advisable to apply by March 1 since dormitory spaces are normally assigned by April 15.

Leave of Absence

An upperclass student in good standing may apply in writing to his dean to take a leave of absence for one or two semesters. He must apply before the end of the fall semester for a leave of absence during the spring semester, and before August 1 for a leave of absence during the fall semester. If the leave is approved, the student must keep his dean informed of any change of address. Ordinarily, no leaves are approved for residence in the Durham area.

Preregistration materials will be mailed to all students on leave of absence. A student failing to preregister will be withdrawn from the University and will have to apply for readmission.

Transfer Between Duke Colleges

A student in good standing may transfer from one Duke undergraduate school or college to another only upon written application and with the approval of the officers of the undergraduate colleges involved. The review of a student's request to transfer will involve consideration of his general academic standing, citizenship record, and relative standing among the group of students applying for transfer. The college to which transfer is sought will give academic counseling to a student as soon as his intention to apply for transfer is known, although no commitment will be implied in doing so. A request to transfer should first be made to an academic dean in the college in which the student is presently enrolled.

Full-Time and Part-Time Degree Status

A regular student candidate for a degree who wants to change from full-time to part-time status, or from part-time to full-time status, must consult his academic dean. For special reasons approved by the dean, a full-time degree student who is qualified to continue in his college may register in a part-time degree (special) status for no more than two courses.

Resident and Non-Resident Student

Normally all undergraduates, with the exception of those who are mar-

ried or whose homes are in Durham, live on-campus. However, overcrowded conditions in the residence halls for men have made it necessary to permit a large number of men to live off-campus. Men other than freshmen who wish to live off-campus should register this desire and receive authorization in the Office of the Dean of Men. A limited number of senior women, 21 years of age or over, may live off-campus. Interested students should apply at the Office of the Dean of Women.

If a student in The Woman's College marries while enrolled, a written request for a change to non-resident status must accompany her statement of marriage plans to the dean of women.

A non-resident student in The Woman's College must apply to the Office of Admissions to be considered for resident status. The request must be made prior to March 1 for September residence and prior to December 1 for February residence. With the approval of the dean of women, a non-resident student whose grade record for the previous semester and over-all average is *C* or better is eligible for resident status.

Non-Degree to Degree Status

A non-degree student must apply to the Office of Admissions for change in status to that of a degree candidate.

Study Elsewhere

Concurrent Enrollment

A student enrolled at Duke may not concurrently enroll in any other school or college without special permission of the appropriate academic dean. See, however, the statement below regarding the reciprocal agreement with the Consolidated University of North Carolina and North Carolina College at Durham.

Summer School

Summer school approval forms for courses to be taken at institutions other than Duke may be obtained from the offices of the deans. A student wishing to transfer credit for summer work elsewhere at an accredited college should obtain approval of his course selections prior to taking the courses. He should present a summer catalog of the chosen institution to his dean and to the director of undergraduate studies in each discipline in which he proposes to take a summer course and request their approval.

Summer courses may be taken at an accredited junior college only if completed prior to the conclusion of the student's sophomore year at Duke. In general, students may transfer credit for a maximum of four courses each summer, as long as the residence requirement for graduation is met.

Reciprocal Agreement With the Consolidated University of North Carolina and North Carolina College

Under a plan of cooperation between the Consolidated University of North Carolina and Duke University, and between North Carolina College and Duke University, students regularly enrolled in the Consolidated University and in North Carolina College during the regular academic year, and paying full fees to their institution may be admitted to two approved courses per semester at Duke University upon payment of a nominal registration fee of two dollars plus any other special fees required of all students. Under the same arrangements, students at Duke University may be admitted to one approved course per semester at the Consolidated University of North Carolina or North Carolina College.

Study Abroad

Special programs for study abroad are available to Duke students. Some of these noted below are organized by the University and others are available through special cooperative arrangements. In certain cases scholarship aid may be applied to study abroad.

A student contemplating study abroad should be guided by the following provisions established by the Undergraduate Faculty Council and administered by the Committee on Study Abroad.

The student should:

1. have a scholastic average of at least *C+* (recommended);
2. obtain prior permission to study abroad from his academic dean and the director of undergraduate studies in his major department;
3. receive certification from the foreign language department concerned that he can handle adequately the language of the country where he will study, provided that the language is taught at the freshman-sophomore level at Duke;
4. obtain, before matriculation, approval of his program of studies from his academic dean and the director of undergraduate studies in his major department.

If the student wishes to transfer credit to Duke and is participating in a program sponsored by an American group, the group must have been approved by the above committee and the program he proposes must meet the qualifications of the sponsoring group; or if he studies abroad under his own sponsorship, work to be considered for transfer must be done

in the language in which courses are normally given in the institutions attended.

A leave of absence from the University is arranged for students who qualify. When possible, arrangements are made for students to preregister while abroad for the semester in which they return.

Information regarding study abroad may be obtained from the academic deans. In all cases they must be informed in advance concerning participation in study abroad.

Junior year abroad. Duke students frequently study abroad during their junior year, either in programs sponsored by other American colleges or universities or through arrangements which they have made directly with foreign universities. In either case, approval must be obtained in advance from the academic dean if a leave of absence and transfer of credit is desired by a student spending his junior year abroad.

Semester study abroad. Currently three programs are offered for a semester abroad. Students in these programs do not withdraw from Duke in the usual sense; grades are transferred as earned. An over-all *B* average is required for admission.

Aix-en-Provence, France. Participating with the Vanderbilt in France Program, courses are given during both fall and spring in French language, art, philosophy, and literature. Completion of French 64, or equivalent, is required prior to departure.

Madrid, Spain. In cooperation with the Vanderbilt in Spain Program for either fall or spring, work is given in Spanish language, art, music, and history. Completion of Spanish 64, or equivalent, is required prior to departure.

As one of the participating members in the Intercollegiate Center for Classical Studies in Rome, Duke University may nominate majors in Classical Studies for admission to a semester's work at the Center usually in the junior year. Instruction is offered in Greek, Latin, ancient history, and ancient art and archaeology.

Summer Study Abroad. Duke University sponsors a variety of summer programs abroad. Open to qualified Duke students these programs have taken place in France, Germany, and Italy. Students are selected competitively and have an opportunity to earn up to two semester-course credits.

Other Information

Release of Student Records

No confidential information contained in student records (academic or otherwise) is released to non-University persons or to unauthorized

persons on the campus without the consent of the student. Consent is evidenced by each student's signing a form which authorizes the release of personal data. The form may provide for the release of information to one or more persons or agencies only, or it may be a blanket release. Blank forms to authorize or revise the permission are available in the offices of the deans.

Identification Cards

Undergraduate students are issued two-part identification cards which they should carry at all times. The cards are the means of identification for library privileges, student health services, athletic events, and other university functions or services open to them as university students. Students will be expected to present their cards on request to any university official or employee.

The cards are not transferable, and fraudulent use may result in loss of student privileges or suspension. A student should report the loss of this card immediately to the office of his or her dean. The cost of a new ID card is $5.00.

Counseling, Health Care, and Other Services for Students

There are a number of resources within the University upon which undergraduate students may rely for counseling and information relating to both academic and personal matters. In addition, the University provides a variety of services for students in areas such as health care, counseling and registration for postgraduate employment, and others. Some of these resources and services are available through the offices of the individual colleges; others are provided by University wide offices and departments. The following pages describe the various resources and services available to undergraduate students.

Administrative Offices of the Woman's College and Trinity College

The Deans of the Colleges

In The Woman's College and Trinity College, the Dean of the college has over-all responsibility for the educational and residential experiences of students within the college. Such responsibility involves the dean in relationships not only with other administrative officers and the faculty, but also with individual students and student organizations concerning a variety of academic, residential and other matters of student concern.

Students in each college are encouraged to confer with the dean as the need may arise.

The College Staffs

Associated with the dean of each college are a number of administrative officers, some of whom engage primarily in academic counseling of students, others in developing the residential program of the college. The following paragraphs indicate the nature of the assistance which students may obtain from the several offices in the respective colleges.

Academic Deans. In each college, academic deans work with students and members of the academic departments in helping students to establish programs of study relevant to their interests and abilities. Their offices also serve as clearing houses for many procedures such as approval of leaves of absences, courses to be taken elsewhere, the dropping and adding of courses, withdrawal from college, and similar matters. A dean of freshmen counsels with students before they arrive on campus by means of the *Academic Guide for Freshmen,* and through correspondence in the summer assists them in the selection of preliminary programs of courses for the fall semester. He (she) also plans and directs the orientation program in Freshman Week, assists in directing the faculty advisory program for freshmen, and is available to freshmen for academic counseling throughout the year. Upperclass students in each college may seek counsel with deans designated for sophomores, juniors, or seniors for academic advice and information not readily available from departmental advisers and other offices within the University. For example, sophomores who have not declared their majors may obtain information and counsel in the choice of majors from the dean for sophomores; seniors may verify their plans for completing graduation requirements with the dean who counsels senior students. Each academic dean is prepared to advise students regarding various college and University programs and preparation for professions and careers, but specialized counseling and other assistance with respect to certain programs and professions is available from designated members of each staff. For example, certain deans are designated to give special attention and assistance with respect to study abroad, living-learning programs, premedical and prelegal programs, and postgraduate awards, such as Fulbright Scholarships, Danforth Fellowships, and others. A premedical and predental adviser on the Trinity College staff is available to all undergraduates (men and women) desiring his assistance, including the compilation and processing of references and records for submission to medical and dental schools. A member of The Woman's College staff, assisted by the Educated Woman Power Committee, gives special attention to career planning for women. Information concerning special counsel within each college is obtainable from the office of any academic dean.

The Dean of Men and The Dean of Women. The Dean of Men and the Dean of Women are concerned primarily with the personal well-being of students and with developing on each campus a residential community supportive of the best educational experience. (In Trinity College and the School of Engineering, the Dean of Freshmen also has responsibility in these areas.) In carrying out their responsibilities, the Dean of Men and Dean of Women and their assistants work closely with residence counselors, judicial boards, and representatives of student governments and residential organizations on each campus. In their offices, room assignments and room changes are made, social functions are registered, the use of college facilities is approved and scheduled, and other non-academic matters are handled. Students may discuss with either dean personal problems of any nature.

In Trinity College, the Supervisor of the Men's Residential Program and Assistant to the Dean of Men has special responsibilities related to the various living groups on West Campus.

In the Woman's College students are aided by the Assistant Dean of Women in finding part-time employment. All students, in The Woman's College, who are employed either on- or off-campus, whether they are aided by the dean's office or not, are requested to register this fact with the assistant dean of women.

Residential Staffs and Counseling

The Woman's College

House Counselors. The house counselors are members of the administrative staff of The Woman's College and are directly responsible to the Dean of Women. They share with the students the responsibility for the satisfactory administration of the house and its program. Since the house counselor has an apartment in the dormitory, she is the College representative most readily available to resident students. If she is not in her own apartment, the receptionist at the house desk knows where she can be found. When she is out of reach, her counterpart in another house or the Dean of Women may be called. Should a student need specialized advice or counsel, the house counselor promptly refers her to the appropriate person or service.

Freshman Advisory Council. This student council is composed of rising juniors and seniors who are selected for qualities of responsibility and leadership. The academic Dean of Freshmen serves as their adviser. Each member of the FAC is assigned to a small group of freshmen within her house. During Freshman Week she welcomes her group and acquaints them with the College and the University. Throughout the year she remains a resourceful friend for her group.

Faculty Associates. These faculty members are elected by each residential house on The Woman's College Campus. Although they do not

live in the houses, they and their families are closely associated with the life of the house. They attend social events, and often participate in or lead discussions or otherwise contribute to programs of the house. A faculty associate may or may not be a "faculty adviser" assigned to the house (see section on Faculty Advising).

Trinity College

Supervisor of the Men's Residential Program. Working with both the Dean of Men and the Dean of Freshmen, the Supervisor of the Men's Residential Program, who is also an Assistant to the Dean of Men, is directly responsible for the living group programs of West Campus. He serves as an adviser to the Freshman Cabinet and the Executive Council of the Association of Independent Houses. He is also in charge of the housemasters who advise in each of the freshman houses and the residents who serve a similar function in the independent houses.

House Staffs. Housemasters, assistant housemasters, and residents are members of the administrative staff of Trinity College. Housemasters are graduate or professional students who supervise the program of the freshmen houses. They are assisted by one or more assistant housemasters who share in this responsibility. Assistant housemasters are generally upperclassmen. A resident is a graduate student who advises a cross-section independent house. All of these residential staff members have rooms or apartments within the residence hall to which they are assigned.

Fellows of Trinity College. A member of the faculty is assigned to each freshman and independent house and to a few of the fraternities to share in the life and program of the living group. He may advise on academic matters, meet with members of the house to discuss their concerns, and in other ways relate to them as mentor and friend. Three of these faculty fellows have apartments within the residential complex they serve.

Administrative Offices of the School of Engineering

Dean

The Dean of The School of Engineering has over-all responsibility for the School and the educational experience and welfare of its students. He works with various officials of the University on matters of general policy and delegates responsibilities within the School to members of his staff.

Associate Dean

The Associate Dean for Undergraduate Study has responsibility for academic matters pertaining to undergraduates, and for working with the academic departments in helping to establish students' programs of study. He counsels with freshmen before they arrive on campus via the *Academic Guide for Freshmen* and, through summer correspondence with them, assists them in making a preliminary selection of courses for fall semester. He also plans and directs the orientation program of the freshmen. Under his supervision a group of selected engineering faculty members serves as advisers to freshmen and to sophomore students. The office of this dean also serves as a clearing house for many procedures such as approval of leaves of absences, courses to be taken elsewhere, the dropping and adding of courses, withdrawal from the School, and similar matters.

Dean of Men

The Dean of Men and his associates work with engineering students in non-academic matters.

Faculty Advising

Apart from academic counseling obtained by students from faculty members whom they come to know on an informal basis, faculty advising of undergraduates takes place in three primary ways. First, in The Woman's College and Trinity College, faculty members serve as general academic advisers to groups of freshmen (and sophomores who have not declared their majors) in each of the dormitories, and are available for individual conferences during the semester, especially before each preregistration period. In The School of Engineering, freshmen and sophomores are counseled by special faculty advisers during the years before the students choose their major fields. Second, faculty advisers in each academic department counsel with students majoring in that department. And third, in all departments the director of undergraduate studies, and, in most departments, a supervisor of freshmen instruction are available to assist students concerning the more technical academic matters pertaining to their departments.

During Freshman Week in September, freshmen discuss with their general faculty advisers the preliminary course selections made in the summer months and obtain approval of final course programs for the fall semester. Thereafter, periodic conferences are held with the advisers, particularly in the week preceding preregistration in the fall and spring

semesters, at which time the advisers approve course programs for the following semester.

Until a student declares his major—at the earliest, in the spring semester of the freshman year or, at the latest, in the spring semester of the sophomore year—he is counseled in academic matters by the general faculty adviser whom he meets in Freshman Week. He may, of course, also obtain the assistance of an academic dean in his school or college. Upon declaring his major, a student is assigned an adviser in his major department who thereafter is responsible for advising the student about course choices, career plans and graduation requirements, and who must also approve the student's course program at each preregistration period. The director of undergraduate studies in each department is also a source of information and advice about curricular and other departmental matters. And the academic deans provide assistance to upperclassmen as explained in earlier pages of this *Bulletin*.

The University Counseling Center

The University Counseling Center provides a counseling service designed to assist individuals in gaining a better understanding of themselves and of the opportunities available to them and to aid them in developing more effective problem-solving skills. The professional counselors do not attempt to impose solutions on the individual. They provide information the individual needs to make judicious decisions and help him work out his own problems in ways that will be satisfying to him. The following are some of the areas in which the counseling services offered by the Center have been found to be helpful: choosing a career; planning educational programs leading to careers; identifying and overcoming educational deficiencies; developing greater self-understanding; developing more effective social relationships.

The Counseling Center has available a wide variety of tests which may be employed in the counseling process. These tests provide measures, among others, of general ability, scholastic aptitude, special skills, achievement, interests, and levels of adjustment. In the process of counseling, the counselee may, with the help of the counselor, choose those tests that may provide information he needs to make decisions.

Counseling undertaken in the University Counseling Center is confidential between the counselor and counselee. The Center releases counseling reports only to those persons specifically designated in writing by the counselee.

Offices of the Chaplain and Religious Life Staff

The Chaplain of the University

The Chaplain has special responsibility for the Duke University Chapel and also serves as Director of Religious Life. The religious life staff consists of the director, two associate directors, and the chaplains of the several faiths.

Associate Directors of Religious Life

The associate directors of religious life serve as advisers to the Y.W.C.A. and the Y.M.C.A. and counsel with students on questions of religion and faith. They and the chaplains entertain inquiries about ethics and moral standards as well as personal problems and conflicts.

Appointments Office

The Appointments Office serves as an intermediary between students and prospective employers by making available information about job opportunities for summer and permanent employment. Appointments may be made for interviews with representatives sent to the University each year by hundreds of companies and schools. Information regarding educational, as well as business opportunities is available.

Seniors interested in the services of the Appointments Office should register with the Office early in the year. Personal interviews for information and counseling are available to seniors after they have registered. Permanent files containing letters of recommendation and records of academic achievement, training, experience, extracurricular activities, and honors may be made available to prospective employers.

Financial Aid Office

The Financial Aid Office administers the University's program of financial assistance to students who are unable to defray the entire cost of college. Within the limits of available funds, the Office provides assistance, on the basis of a student's demonstrated need, in the form of scholarships, grants-in-aid, loans, and part-time employment. Students wishing to apply for financial aid or needing counsel regarding their qualifications for such assistance should contact the Financial Aid Office.

Student Health Service

The aim of the Student Health Service is at all times to bring about and maintain a climate of good health (both physical and mental) on the campus. To further this aim there are services and facilities specifically designed for student use, and, when necessary, the Student Service has immediate access to all services available in the entire Duke University Medical Center.

The facilities of the Student Health Service are available to all currently enrolled full-time undergraduate students as well as to regularly enrolled students in the graduate and professional schools.

The main components of the Health Service include the Student Health Clinic located in Duke Hospital on West Campus, and the Woman's College Infirmary on the East Campus. For treatment of most illnesses or injuries, women students should first contact the Infirmary; men students, the Clinic in Duke Hospital. For problems arising suddenly, immediate attention should first be sought at the facility nearest the student at the time of the illness or injury. Emergency transportation, if required, can be obtained from either the Duke Campus Police or the Durham Ambulance Service. Residential staff personnel should be consulted whenever possible for assistance in obtaining emergency treatment.

The Student Health Clinic on West Campus is open year-round. The Woman's College Infirmary on East Campus is open from the beginning of Freshman Week in September (as designated by the official calendar) until Commencement in June. The Woman's College Infirmary is closed during Thanksgiving, Christmas, and spring vacations; during those times as well as during the summer sessions those students entitled to its use will be cared for in the Student Health Clinic on West Campus.

Services

The following are services provided by the Student Health Center:

1. Unlimited outpatient visits to the Student Health Clinics.
2. Routine laboratory and X-ray examination needed to diagnose acute illness or injury.
3. Hospitalization in either Duke Hospital or Woman's College Infirmary for treatment of acute illness or injury. (Limited to a maximum of thirty days per regular semester, six days per summer session.) Special duty nurses, if required, will be provided at the student's expense. (If students have insurance providing hospitalization, surgical, or medical benefits, the benefits shall be applied to the cost of their medical care.)
4. Most drugs required for the treatment of acute illness or injury. Students will be charged for drugs not provided by the Health Service

and will be so informed, as necessary, generally in advance. Blood transfusions are provided at extra expense.

5. Consultations with specialists in the Duke University Medical Center as required for the diagnosis and treatment of acute illness or injury. Such consultation visits *must be authorized by a Student Health Service physician in advance*, except in the case of emergency.
6. Certain periodic health examinations, such as for practice teaching, scholarships, and educational programs can be obtained without charge and *by appointment* with Student Health Service physicians. Other examinations such as for regular employment, travel abroad, insurance, etc., can be arranged, but will be provided at the student's expense. Students are urged to discuss their routine physical examination requirements with the Health Service physicians in order to prevent possible misunderstanding.
7. Immunizations as required for the general protection of the student body will be provided free of charge. Immunizations required for other reasons (travel abroad, employment, etc.) can be arranged at cost. Clarification on this point can be obtained at the Health Service.
8. Regular injections, as in the treatment of allergic conditions, can be scheduled at no extra charge through the Health Service, however, the student must provide the vaccine required which then can be stored in the appropriate Health Service Clinic. Diabetics requiring daily Insulin injections are expected to perform these personally.

The following services are not handled by the Student Health Center:

1. Routine eye examinations, lens prescriptions, or care of contact lens problems. (Treatment for acute eye disease or injury is, of course, provided.)
2. Routine dental care. (Emergency treatment as for infection or pain is provided on a limited basis.)
3. Skin disease other than of acute or disabling nature.
4. Elective treatment or elective surgery. (This is sometimes difficult to define categorically. Students are urged to discuss their individual situations with the Health Service physicians *before* assuming that a certain problem will or will not be cared for through the Health Service.)
5. Treatment of pre-existing or chronic conditions. (Again, definitions can be difficult, and discussion is encouraged.)
6. Private physicians' fees other than consultation fees authorized through the Student Health Service. Students always have the option of employing private physicians of their own choosing; indeed students with known and pre-existing medical problems are encouraged to do so. However, financial responsibility in such instances rests with the student.

7. Treatment of accidents or illnesses occurring during vacations or while off campus is not included in this service. A special commercial policy available only to regularly enrolled Duke students furnishes complementary protection, if desired.
8. Care of dependents or conditions related to pregnancy.
9. Long-term psychiatric care. Acute psychiatric care requiring hospitalization is provided and is subject to the same limitations as for other illness. *Advisory psychiatric consultation* on an outpatient basis is available at no extra expense to men students through the Student Health Office on West Campus. Full time undergraduate women in The Woman's College and the School of Nursing may receive advisory consultation without charge in the Student Mental Health Clinic located in the Woman's College Infirmary. Psychiatric consultation for other women students is available through the Student Health Office on West Campus.

It should be emphasized that students requiring health services not provided through the Health Service can obtain information at the Health Service as to how such services can be most easily obtained.

Residential Accommodations and Regulations

Residential Facilities for Undergraduate Students

The Woman's College

Thirteen residence houses afford both single and double rooms, although there are few singles in some of them. Students from all four classes reside in most of the housing units. Two of the houses are limited to living-learning corridors where upperclass students are grouped together according to special interests. One floor of the "Graduate Center," which is located on the West Campus near the dormitories of the School of Nursing, houses approximately 120 Woman's College students. (Another section of the "Graduate Center" is occupied by graduate women students and the remaining section of the building is assigned to men students enrolled in the graduate and professional schools.)

Entering students may state dormitory and room type preference; however, as returning students have first choice of rooms, no guarantee is made concerning room assignments. After the initial assignment students must themselves make arrangements for roommates from among their friends or accept single rooms.

Dormitory accommodations are provided during Thanksgiving and spring vacations and the greater part of the Christmas holidays, but all houses are closed between the winter and summer sessions.

Trinity College and the School of Engineering

The Men's Residence Halls on West Campus are divided into forty-two living groups. These groups are of three major types: all-freshman houses, independent cross-section houses, and fraternity sections. The ten all-freshman houses and ten of the independent cross-section houses are open to freshmen.

The all-freshman houses are located in Kilgo and Crowell Quadrangles and accommodate approximately two-thirds of the freshman class. Each of these houses elects its own officers and council and organizes social, intramural, and other types of programs. A housemaster, a graduate, or professional student, assisted by several upperclassmen who serve as assistant housemasters, guides the program of the house. A faculty member who serves as a fellow of Trinity College, works closely with the program of each house and is available for individual and group advising.

After the freshman year, all fraternity men are required to live in fraternity sections. Men who do not affiliate with a social fraternity may choose from among the twelve independent, cross-section houses. Each of these houses has its own officers and its own programs. These programs include discussions with faculty members, seminars, film festivals, as well as social and athletic events. Each house is staffed by a resident — a graduate or professional student — who advises the house. He has a room or suite in the house. Each independent house, like the freshman houses, has a fellow of the College assigned to it.

It is the aim of the College to provide through its residence halls program not only comfortable lodging, but opportunities for informal learning and the enrichment of the total education experience.

Living Off-Campus

Normally all undergraduate students, with the exception of those who are married or whose home is in Durham, live in University Residence Halls. However, overcrowded conditions, especially in the men's dormitories, have made it necessary to permit a number of students to live off-campus. Men students above the freshman level and senior women students over twenty-one years of age who wish to live off campus should seek authorization from the Dean of Men or the Dean of Women, as appropriate.

Rental Procedures

A $25.00 room deposit is required before a student may reserve a room. Once a student matriculates, the deposit is held for the entire period of his academic enrollment.

Rooms are normally rented for the academic year; rental payments, however, may be made by the semester. All payments must be made in advance to the Bursar. After the day of registration, room rent will not be refunded except to those students who withdraw involuntarily to enter the Armed Services of the United States.

See the section "Financial Information" concerning room rent and conditions under which the $25.00 room deposit is refundable.

Occupancy

Rooms within the residence halls may be occupied by freshmen on the first day of Freshman Week and by upperclassmen forty-eight hours before the day classes commence. Any exceptions for occupancy of rooms before these dates depend upon authorized assistance in the Freshman Week program.

Keys

Upon arrival each year each student will be provided with a room key. A $1 refundable key deposit is required at the time the key is issued. At the end of the occupancy period a student is required to return the key to the place of issue at which time the deposit will be refunded.

Vacating Procedures

All rooms must be vacated twenty-four hours after the last day of final examinations or official withdrawal from the University (except that those students who are graduating may remain until twenty-four hours after Commencement exercises).

Students are required to obtain written authorization from the Dean of Men or the Dean of Women to remain in the residence halls longer than the twenty-four hour period mentioned above.

A student must remove all personal effects from his or her room prior to termination of his room contract.

Room Changes

Unless authorized, room changes make the student liable for rent for each room for the period involved.

Women make room changes by prearrangement with the house counselor and the authorization of the Assistant Dean of Women.

Men make room changes by prearrangement with the living group housing chairman, resident, or housemaster, and the Dean of Men. No charge will be made for these changes until October 1 for the fall term or until February 16 for the spring term. After these dates, a charge of $2.00 will be assigned for room changes.

Vacancies

Women's Residences

Since only limited vacancies occur in women's residences, each situation is treated independently by the Assistant Dean of Women in accordance with established procedures.

Men's Residences

Vacancies in a multiple occupancy room. Rooms are usually rented as doubles and singles. If necessary, some rooms may be temporarily set up for multiple occupancy. Such rooms will be changed as soon as possible to their original status, as double or single rooms, and the remaining occupant(s) required to pay the cost differential. A student remaining alone in a single/double room from which an occupant has vacated will be given an opportunity to move to a double room if he so desires. Once unexpanded, rooms may not be re-expanded during the same school year except by special permission of the Dean of Men.

Vacancies in a normal occupancy room. When a vacancy occurs in a normal occupancy room in an established living group, the designated authorities of that living group will be notified by the Dean of Men and will be expected to consult with the remaining occupant and fill the vacancy within one week of notification. If the vacancy is not filled within that time, the vacancy may be filled by the Dean of Men. If this vacancy cannot be filled in either of the above described manners, then the remaining occupant will be required to:

a. Move to another room in the same dormitory in which a vacancy exists, or

b. Arrange to pay the prorated differential cost resulting from the vacancy, or

c. In the spring semester only, and only if there are excess vacancies on-campus, the Dean of Men may, if circumstances warrant, recommend assignment of one man to a double room when a single room is desired and none are available within a living group.

When a vacancy occurs in a normal occupancy room in an area not reserved for a special living group, the remaining occupant will be ex-

pected within a week after official notification by the dean of men either to:

a. Select a roommate or accept a roommate, if available, assigned by the Dean of Men, or

b. Move to another room in which a vacancy exists, or

c. Arrange to pay the prorated differential cost resulting from the vacancy, or

d. In the Spring Semester only, option *c* above may be applied upon the recommendation of the Dean of Men.

Student's Possessions in Rooms

The following items are not permitted in rooms in the residences:

1. Furniture other than that provided in the residence halls by the University unless approved by the director of housing management. (Exceptions are small radio, phonograph, or television tables which are permissible without reference to the Office of Housing Management.)
2. Pets of any sort.
3. Cooking appliances, except electric coffee-makers with self-contained elements.
4. Rugs which measure over fifty-four square feet.
5. Personally owned refrigerators.

   (Note: A limited number of small refrigerators are available for rental by the University to undergraduate men only. Men students will be notified of rental procedures. One fourth of the units available are reserved for freshmen.)

Special equipment necessary for medical reasons will be authorized by the Dean of Undergraduate Men or the Dean of Undergraduate Women, as appropriate on receipt of verification of need by the Student Health Service.

Care of Rooms and Adjacent Campus Areas

Though limited maid service is available, a student is responsible for the care of his or her room and furnishings and is required, as a condition of occupancy, to keep the room reasonably clean and orderly. The University reserves the right for Housing Management, as well as custodial and maintenance personnel, to enter and to inspect at reasonable hours the condition of any student's room.

Nails, screws, tacks, or adhesives on the walls or woodwork of the residences are prohibited. The utilities, wiring, locks, or screens should not be altered in any way. No student shall remove University furniture or equipment from his room.

Games or other activities which may damage lawns or shrubbery adjacent to residence halls are not permitted.

No student shall enter custodial, utility, or maintenance spaces within the residence halls unless accompanied by University authorized custodial or maintenance personnel. Use of roofs is not authorized.

Routine complaints and requests pertaining to maintenance and services should be reported to the housekeeper in the appropriate residential area.

Damage Charges

Students will be held responsible for damage that occurs in their rooms even though they may be absent at the time. Any repair costs will be assessed the occupant(s) of the room. Any appeal for reassignment of costs should be made through the Director of Housing Management to the Court of Appeals.

Students must report within five days after moving into a room any earlier damage that has not been repaired in order to be released from financial responsibility. A form used for reporting these damages to the Office of Housing Management will be provided at the time of occupancy.

Storage

Within two weeks after room occupancy, all trunks and heavy luggage must be stored in a storage area designated for each residence. Limited facilities for storing personal effects over the summer are available to students who have preregistered for the fall semester. Non-students or students living off campus cannot store their personal effects in the residence halls. Storage will be limited to trunks and boxed items no larger than the average trunk; each student will be expected to arrange for delivery and pick up of his belongings. Each item must be well marked with the owner's name and his permanent mailing address. Receipts will be given at the time of acceptance and must be surrendered by a student upon withdrawal of his items from storage.

Personal Property Insurance

The University assumes no financial responsibility for damages to or loss of personal property. Personal property insurance coverage is recommended for all students.

Trading and Soliciting

Without written permission from the appropriate undergraduate dean, no student, tradesman, or salesman may solicit or sell goods or services

in the buildings or on the grounds of Duke University. A student who invites or receives an unauthorized salesman, or who uses his room for any commercial purpose, is liable to disciplinary action.

House Dues, Men's Residences

A student who lives within a dormitory room assigned by the College to a particular living group and is accepted into the living group according to constitutional guidelines governing the group, is recognized as a member of the living group and assumes responsibility for payment of house dues duly assessed by procedures specified in the group constitution. A student who accepts the constitutional guidelines for membership and who decides to live off-campus while maintaining full membership is held responsible for all financial obligations to that living group. Associate membership can be held by a student provided a signed financial agreement between the student and the living group is registered in the Office of the Dean of Men within two weeks after accepting this membership. Any student who accepts membership in a living group and at a later time assumes additional financial obligation to another living group, must continue to assume both of these obligations or move from the house.

Failure to meet the financial obligations noted above will be considered an indebtedness to the University and can result in the application of the usual University sanctions, provided the group's funds are handled in the Bursar's office.

Food Services

The Woman's College

All resident women students, except the upperclassmen who are assigned rooms in The Graduate Center on West Campus, are required to contract for their meals in the University Dining Halls on a semester basis. The board fee covers three meals per day during the regular term exclusive of vacations. On the East Campus there are two dining halls. Ordinarily, the students who reside in Southgate and Gilbert-Addoms take their meals in Gilbert-Addoms. Students who live in the other East Campus dormitories take theirs in The Woman's College Union. Students who reside in The Graduate Center and who are on the board contract basis take their meals in the dining room in that building.

Provisions are made for Woman's College students who wish to do so to take some of their morning and evening meals in The Great Hall or The University Room of the West Campus, and arrangements may be

made for those students who have a congestion of classes scheduled on the West Campus during mid-day to take the noon meal there.

Meal tickets for guests may be purchased in either of the East Campus dining halls.

Snack bar service is available on the East Campus in The Woman's College Store, in The Graduate Center in the Coffee Lounge, and on the West Campus in The Cambridge Inn located in the West Campus Union Building.

The charge for board is $275.00 per semester payable at the time of registration. If a student withdraws during the first six weeks of the semester, a board refund is made on a pro rata basis. If withdrawals occur after that time, no refund is allowed.

Trinity College and School of Engineering

The dining facilities on West Campus include two cafeterias with multiple-choice menus, the Oak Room which is a service dining hall where full meals and a la carte items are served, and a self service snack bar called The Cambridge Inn which is open throughout the day and evening. The men students may, also, take their meals in The Graduate Center Dining Hall and in either of the dining halls on East Campus.

The cost for the academic year will approximate $625.00 but would vary from this amount depending upon the individual. If requested, optional meal ticket books of scrip in $10.00 denominations may be obtained from the Dining Halls' Office, 106 Union Building, West Campus; the bill will be sent home monthly. To arrange this, parents should send a letter of authorization to Mr. T. W. Minah, Director of Duke University Dining Halls.

Student Life Regulations and Responsibilities

Duke University expects and requires of all its students full cooperation in developing and maintaining high standards of scholarship and conduct. Each student is subject to the rules and regulations of the University as currently in effect or, from time to time, are put into effect by the appropriate authorities of the University.

Any student, in accepting admission, indicates his willingness to subscribe to and be governed by these rules and regulations and acknowledges the right of the University to take such disciplinary action, including suspension or expulsion, for failure to abide by the regulations or for other conduct adjudged unsatisfactory or detrimental to the University.

Responsibility for prescribing and enforcing rules and regulations governing student conduct rests ultimately with the Board of Trustees of Duke University and, by delegation, with administrative officers of the University and of the several schools and colleges. In each of the undergraduate colleges, as well as in the University as a whole, many of these rules have been established over the years by cooperative action between students and administrative officers and, in the case of some rules, with participation of faculty members as well. Representative student organizations, such as student governments and judicial boards, and more recently, community wide bodies of students, faculty and administrators, have initiated proposals for policies and rules necessary to assure satisfactory standards in academic and non-academic conduct; and these

proposals have been accepted by college and University officers and have become a substantial, if not all-inclusive, body of rules governing student life at Duke.

Similarly, the enforcement of rules in the undergraduate schools and colleges has traditionally been a cooperative endeavor of students and administrative officers, as well as of faculty members who have participated in review and appeals committees and have advised with college and University officers about appropriate standards and procedures in such matters. Student participation in rule enforcement is reflected best in the judicial boards which have long played a significant part in the hearing and judging of cases involving student infractions of established rules. Although administrative officers have final authority in the disposition of disciplinary cases, usually the authority is entrusted to judiciary bodies.

This tradition of shared participation by various members of the University and college communities is a valuable part of life at Duke and is a tradition that should be fostered and perfected in the years ahead. Its viability, however, is dependent, at the least, upon a continued mutual recognition by all members of the community of the need for high standards of scholarship and conduct, a willingness to exercise the personal and corporate responsibilities that accompany such recognition, and an appreciation of the different roles and responsibilities played by various members who participate in the life of the community. This last factor relates particularly to the role of students in determining and supporting high standards.

The Woman's College

Philosophy

The liberalization of social regulations in recent years reflects a shift in focus of responsibility more than it reflects changes in behavior and habits of students. Liberalized regulations indicate respect for individual integrity and freedom of the individual to make choices and to determine personal schedules and codes by which to live. Because of individual differences and the responsibility of the College for safety, health, and a learning environment, however, certain regulations must be maintained and enforced by the community itself. Within the bounds of the regulations, the student is expected to chart a healthful and reasonable course conducive to high standards of scholarship.

In the spring of 1967, the Woman's Student Government Association re-emphasized a code of honor and formally adopted the following "Honor System":

"As members of The Woman's College of Duke University we commit ourselves to the principle of honor. With full realization of the responsibility inherent in membership in this community, we agree to live by a system based upon that principle.

"The system embodies the concepts and obligations that each student must accept all community regulations, regardless of personal disagreement, and must report any personal violation. Furthermore, each student must share in the responsibility to protect the system by encouraging other students to live up to their obligations by speaking to a person who has violated a regulation, reminding her of the responsibility to report oneself."

Formulation and Modification of Regulations

Traditionally, the regulations of The Woman's College have been administered and revised by the student Judicial Board in cooperation with the administrative staff of the College. Under this procedure, any student, or group of students, has been privileged to recommend a change or changes in the regulations by presenting a petition to the Judicial Board. In the fall of 1969, the process for formulating policies and regulations relating to student life will be supplemented by the work of the Community Council of The Woman's College. This Council, the constitution and by-laws of which appear as Appendix A, is a body representative of students, faculty, and administrative staff who serve in an advisory capacity to the dean and the staff of The Woman's College.

Judicial Structure, Procedures, and Penalties

A House Judicial Committee, of elected members of each house, handles minor infractions of regulations by residents of the house.

The Judicial Board exercises the authority delegated to students by the College to adjudicate serious cases of misconduct and/or violation of the regulations of the College. In cases judged to warrant suspended suspension or separation from the College, however, the Judicial Board presents its findings and makes its recommendations to the Discipline Committee. The Judicial Board has initial jurisdiction over the following violations:

Overnight absence with failure to follow Leave Card procedures, falsification of Leave Card, falsification of In-and-Out Card, opening end door after house closing, plagiarism, cheating, theft, perjury, falsification, and misrepresentation, violation of drinking regulations, violation of automobile regulations, violation of library regulations, misuse of ID card, and causing hazard or embarrassment to members of the College community, or creating a social disturbance.

The Discipline Committee is appointed and chaired by the dean of The Woman's College. Its membership is representative of the student body, the faculty, and the administration. The Committee reviews the decisions of the Judicial Board in all cases in which suspended suspension or a more serious penalty is recommended by the Judicial Board and in all cases of academic dishonesty. Members of the Discipline Committee and members of the Judicial Board meet together on occasion to discuss college problems and the development of policy.

Violations of academic and community regulations are considered serious offenses and are subject to judicial action which may involve the penalties of suspended suspension, suspension, or expulsion. Suspensions and expulsions require involuntary withdrawal from the University, and the action is recorded on the official academic record of the student.

Initial jurisdiction exercised by College and University officials includes Drugs as well as pickets, protests, and demonstrations (see section on "University Regulations").

Judicial Procedures provide that:

1. The accused has the right to be faced by the accuser or by a written report of the accuser.
2. The accused is to be given written notice of the charges against her at least seventy-two hours before the hearing. The accused may waive the formal notice and the seventy-two hour notification period. If she desires additional time in which to prepare her defense, she may ask for and be granted a delay of the hearing.
3. The accused has the right to offer testimony, introduce documents on her behalf, and bring with her one character witness (a member of The Woman's College student body) and such material witnesses as she deems necessary.
4. To avoid self-incrimination the accused has the right to remain silent in answer to a question.
5. The accused is reminded that she will be on her honor to give only truthful testimony and that failure to do so will constitute perjury.
6. The case will be presented to the Judicial Board by the student's judicial representative or the chairman of the Judicial Board, who will relinquish her vote in such case. The accused is to be made aware of any information which the Board will consider and is to be told the grounds for the determination of any finding or penalty imposed.
7. The accused may appeal any decision of the Judicial Board.
   a. The appeal must be made in writing within 48 hours after which time the decision is final.

b. The lines of appeal are as follows:
Judicial Representative
House Judicial Committee
Judicial Board
Discipline Committee
The University Review Committee

8. The Judicial Board will rehear any case in which significant new evidence can be introduced. By a two-thirds vote, the Board may decide to rehear such a case.

College Community Regulations

Integrity. Consistent with the principle of Honor, the community cannot tolerate:

Plagiarism or Cheating (See *Use and Acknowledgement of Sources.*)
Theft
Perjury (failure to give truthful testimony before any Woman's College judicial body or Judicial Board member)
Falsification or Misrepresentation (including Special-Leave Cards, In-and-Out Cards, library slips, laundry slips)
Misuse of Student Identification Cards (If both parties involved in the fraudulent use of the ID Card are Woman's College students, both the student who lent her card and the one who borrowed it for purposes of misrepresentation will be held responsible.)

Social Disturbance. Any individual who causes hazard or embarrassment to members of the community or College, or who creates a social disturbance, will be subject to judicial action.

Social Functions—Registration. All organized activities, lectures, field trips, conferences, retreats, house and beach parties, etc., must be registered and entered on the official calendar in the Office of the Dean of Women. The chairman of the host group is responsible for this registration.

Motor Vehicles. Upperclass *resident* students, who register their cars (or motor scooters or motorcycles) in the Office of the Dean of Women may have such vehicles or the continuous use of them.

An annual parking rental fee of $30.00 for automobiles and $10.00 for motor scooters and motorcycles is payable upon the registration of the motor vehicle in the fall.

All *non-resident* students are eligible to have motor vehicles and, upon registration, to have campus parking privileges free of charge.

Marriages. Any student planning to continue her studies at Duke after marriage must inform the Dean of Women promptly, arrange for off-campus housing, and supply her new address. If the marriage is to occur during the academic year, the Dean of Women should be informed before

the marriage takes place; if prior notification should be impossible, however, the dean is to be informed of the marriage immediately. The student may forfeit her place in the College if she fails to observe these regulations.

Conferences and Conventions. Invitations to individuals or to organizations outside the University to attend or hold meetings on The Woman's College Campus must be discussed with and approved by the dean of undergraduate women well in advance of the extension of the invitation by the prospective host or host group at Duke. It is the established policy of The Woman's College not to use its dormitory facilities for the housing of convention guests during the academic year.

Dormitory Regulations

Quiet. Quiet conditions are vital for study and sleep in an academic and residential community and can be maintained only through the cooperation of every individual. Reasonable quiet must be maintained in the houses and on campus at all times. Lack of cooperation in this matter is cause for judicial action.

Hours for Dormitory Residents. The following hours for dormitory residents are:

Opening hour, 6:30 a.m.
Curfew for sophomores, juniors, and seniors, 2:00 a.m.
Curfew for freshmen,
  First semester, before the mid-term—
    Monday-Thursday, 11:00 p.m.
    Friday, Saturday, 2:00 a.m.
    Sunday, midnight
  After mid-term and second semester—
    Sunday-Thursday, midnight
    Friday, Saturday, 2:00 a.m.

Woman's College students living in the Graduate Center must be on their hall by curfew. (The first floor parlors in the Graduate Center are open until 2:00 a.m. every night.)

Curfew for all students during official vacation period and during the last week of classes and the final examination period each semester is 2:00 a.m.

Whenever a student realizes that she will be late, she must telephone the dormitory immediately.

Extension of Curfew. A student may request late permission from her house counselor. This permission requires a specific time of expected return and must be approved in advance; permission may not be granted over the phone.

To attend an on-campus Duke University function which may extend past her curfew, a student may simply sign out to return immediately after the end of the function.

Sophomores, juniors, and seniors may extend their curfews by signing a Late Leave Card in advance indicating their destination and specific time of expected return.

Any Late Leaves for freshmen, which usually may not be extended beyond 2:00 a.m., must be approved by the house counselor.

Woman's College students living in the Graduate Center must be on their hall by their curfew.

Hours for Men Visitors. Men visitors may call for students after 8:00 a.m. (9:00 a.m. on Sundays), and may be entertained in public parlors after 10:00 a.m. and until 11:00 p.m. Monday through Thursday; 2:00 a.m. Friday and Saturday; and midnight Sunday.

Men visitors may enter the private quarters of the dormitories *only* with permission of the house counselor and announcement.

Visiting Men's Residences. Women students may go into the public areas of men's dormitories only as described in the section under Trinity College and The School of Engineering Social Regulations.

Women may enter the living areas in men's dormitories *only* when an open house in the particular dormitory has been registered and approved in the Office of the Dean of Men and, upon authorization, posted by the Office of the Dean of Women in the women's dormitories.

Absence. In order that a student may be located in case of necessity, absence from campus must be registered in complete and correct detail. It is the student's responsibility to notify the house receptionist of changes in plans so that her sign-out or Special Leave Card is a true indication of her whereabouts and expected time of return. Only the house receptionist may correct or complete the card.

Signing In-and-Out. The In-and-Out Card must be filled out completely and legibly any time the student leaves the Durham-Chapel Hill area or plans to return to the dormitory between midnight and 2 a.m. It is *recommended* that the student sign out when leaving the Duke campus to return after 7:30 p.m.

If a student forgets to sign out, she may telephone the house receptionist who may sign her out. However, each student must sign herself in upon her arrival.

In the interest of the student's safety, signing out should be as specific as possible as to destination, companions, conveyance, and time of return. Regardless of the hour, students must call in if they are delayed beyond the house closing hour.

Special Leave from Campus. The Special Leave Card is a record of the student's whereabouts when she is spending the night out of the

dormitory. (This includes spending the night in another Woman's College dormitory, the Infirmary, or Hanes House, or at a registered social function on the East Campus.)

Although the student is responsible for her own plans, it is expected that she will discuss with her parents any limitations which they feel she should recognize.

As a guide to adjustment to college life, freshmen must have their Special Leave Cards for off-campus absences countersigned by their respective house counselors.

A student who plans to be absent from the University for more than a week must consult the appropriate Dean of Instruction or the Dean of Women before leaving the campus.

Late Arrivals. A student is expected to return from an overnight trip by her curfew. In any event, if a student is returning after 2:00 a.m., she should telephone the East Campus Police (ext. 2444) as soon as she arrives in the city of Durham, and ask to be admitted to her dormitory, giving her name and the number of her taxi.

Open Houses. Each dormitory may elect by a secret, affirmative vote of the majority of its members to open the living area to men visitors for specific visiting hours. The house counselor must be consulted in advance, the open house must be registered with her, and other prescribed procedures as posted in the dormitory must be followed. The house must assume full responsibility for each open house.

Guests. A student may have overnight guests in the house only when she has cleared these plans with the house counselor and when she herself will be there to assume the responsibilities of the hostess. She must inform her guest of the college regulations and must assume the responsibility for any infraction of the rules by any guest other than a Woman's College student. No overnight guest may be entertained in the dormitories during Freshman Week or during the examination period.

The College reserves the right to ask a guest to leave if she does not abide by the rules.

Meetings in the Dormitory. All meetings held in the dormitory living rooms must be approved by both the house president and the house counselor.

Use of Dormitory Rooms during Vacations. The College reserves the right to use the dormitory rooms during announced vacations for special guests.

Trinity College and the School of Engineering

Responsibility for matters relating to student life of men enrolled in Trinity College and the School of Enginecring rests with the deans of each college or school. Immediate supervision of student conduct and the

residential program for all undergraduate men is entrusted to the Dean of Undergraduate Men, for upperclassmen, and the Dean of Freshmen, for freshman students.

In exercising their responsibility in these areas, the deans traditionally have worked closely with, and have received the support and cooperation of, students and faculty members in both the formulation and enforcement of various policies and regulations. In furtherance of such cooperative relationships, the West Campus Community Council was established in 1967 as an advisory body to the deans and as a forum through which representatives of various parts of the community—students, faculty, and college officers—might discuss matters and offer proposals relating to undergraduate life on the West Campus of the University. In April, 1969, after almost two years of trial and experimentation, the Council was constituted on a more formal basis by the adoption of a constitution which goes into effect in the fall of 1969. Within the limits of its deliberative and advisory role, the Council has the potential of being an effective means for the consideration of subjects of concern to the West Campus and for the formulation of proposals that are supportive of the educational purposes of that community. The Constitution of the Council appears as Appendix B.

Judicial Structure, Code, and Procedures

Men's Student Judicial Board. Most cases involving student infractions of college and University regulations are first heard by the Men's Student Judicial Board, which is composed of students selected by the West Campus division of the Associated Students of Duke University. The findings and decisions of the Board are referred for approval to the deans of Trinity College who have final responsibility in all disciplinary cases not appealed beyond the college level.

Deans of Trinity College. In addition to reviewing the decisions of the Judicial Board, the deans of Trinity College act as a hearing committee in the absence of the Board or in special types of cases which the Board has declined to hear. Moreover, in extraordinary circumstances, the deans may hear originally any disciplinary case and assess penalties appropriate to the seriousness of the offense involved. In all instances of disciplinary action, whether undertaken originally by the Judicial Board or by the deans, the essentials of due process required for an academic community are observed.

University Review Committee. The University Review Committee, composed of nine faculty members, hears on appeal cases originally heard by the Men's Student Judicial Board and the deans of Trinity College. A statement concerning its jurisdiction and procedures appears as Appendix C.

University Hearing Committee. Cases involving violations of the "Regulation on Pickets, Protests, and Demonstrations" are heard by a special University hearing committee composed of faculty members and students. See the explanation concerning the regulation and the hearing committee on pages 00.

The Judicial Code. The *Judicial Code*, which was last revised in February, 1968, by the then existing Men's Student Government Association and was approved shortly thereafter by the deans of Trinity College, is a compilation of certain types of misconduct, together with possible penalties, for which students in Trinity College and the School of Engineering are held responsible. Other forms of prohibited conduct are set forth in regulations which appear elsewhere in this chapter. By means of the *Code* and such additional regulations, an effort is made to specify the types of behavior for which disciplinary action may be taken. Such written specifications of unacceptable conduct, however, do not preclude college and university officers from holding students responsible for other kinds of misconduct which are shown to be clearly inconsistent with the best interest and purposes of the Duke community.

The provisions of the *Judicial Code* are as follows:

Preamble. Students of the undergraduate colleges of Duke University are required to maintain at all times a high standard of private and public behavior on the University campus and within its environs. Claims of ignorance of the following regulations will not be accepted as an excuse.

Section 1. The following actions are deemed to be extremely serious to the well-being of the Duke University Community. Those found guilty of these offenses shall be liable to expulsion as the maximum penalty.

A. Cheating or plagiarism
B. Forgery
C. Assault and battery
D. Theft
E. Violation of women's living quarters
F. Perjury
G. Fraud (including falsification of auto registration, meal tickets, library slips, laundry slips, or student identification cards)
H. Willful and malicious damage of University property or property of others
I. Illegal use or possession of firearms and ammunition, or explosives
J. Accumulated convictions of any of the offenses listed under Section 2

Section 2. The following actions are deemed to be serious offenses against the Duke University Community. Those found guilty of these offenses shall be liable to suspension as the maximum penalty.

A. Brawling
B. Drunkenness involving disorderly conduct
C. Violation of examination procedure
D. Aiding and participation in any form of mob violence (including rioting)
E. Gambling
F. Violation of the freshman car regulation
G. Possession or use of fireworks
H. Gross negligence in the use of motor vehicle
I. Drinking on the University grounds or in its public buildings
J. Violation of West Campus, East Campus, or Hanes House visiting regulations
K. Violation of suspended driving status
L. Lying
M. Obscenity
N. Violation of open living area regulations
O. Violation of University regulations on picketing and protesting

Section 3. The following actions are deemed to be less serious offenses against the Duke University Community. Those found guilty of these offenses shall be liable to disciplinary probation as the maximum penalty.

A. The display of alcoholic beverages on the University grounds or in its public buildings
B. Rowdiness
C. Failure to respond to the summons of a court established by the Men's Student Government Association
D. Running from a campus policeman
E. Failure to provide personal identification to the proper University authorities upon request.
F. Contempt of Judicial Board
G. Violation of East Campus or Hanes House Dormitory drinking regulations

Section 4. Penalties which the Judicial Board may recommend for the offenses against the University shall include the following which shall be defined as follows:

A. Expulsion: Immediate dismissal from and denial of readmittance to Duke University.
B. Suspension: Dismissal from Duke University with the right to be readmitted when the appropriate "College" permits.
C. Suspended Suspension: Technical suspension from school, with continuation in school contingent on good behavior and satisfactory academic performance. For the following two semesters the person's citizenship and academic records are reviewed, continued good behavior and satisfactory academic performance being the criteria for remaining at Duke University.

D. Probation: Probation for two semesters and the threat of suspension if again apprehended committing the same offense or one of equal or worse nature. The person's citizenship or academic record, or both, is reviewed for two semesters. An unsatisfactory record may lead to suspension.

E. Administrative *F*: A failing grade assigned in cases of cheating or plagiarism.

F. Dean's Reprimand or Board Reprimand: Reprimand by the Dean or Board according to the nature of the offense. These penalties will be given in cases where the seriousness of the offense does not warrant any of the above penalties.

G. Suspension of Driving Privileges: Suspension of driving privileges in cases involving motor vehicles.

H. Fines: Imposition of a fine appropriate to the nature of the offense. Fines for other convictions may be levied at the discretion of the Board.

Judicial Board Procedures. Judicial Board procedures are outlined below:

I. Rights of the accused.

A. The accused has the right to be faced by the accuser or by a written report of the accuser.

B. The accused is to be given written notice of the charges against him at least seventy-two hours before the hearing. If he desires additional time in which to prepare his defense, he may ask for and be granted a delay of the hearing. The accused may waive the notice and the seventy-two hour notification period.

C. The accused has the right to produce and question material witnesses, and can produce as many as two character witnesses, introduce documents, and offer testimony in his own behalf. He should have a reasonably adequate summary and access to all of the material testimony and other evidence against him so that he may prepare his defense.

D. If the accused pleads not guilty, he has the right to request an open hearing which may be attended by any member of the MSGA.

E. The accused may appeal any decision of the Judicial Board.

F. The accused has the right to remain silent in regard to action brought against him by a member of MSGA, the faculty, staff, or otherwise. Any information pertaining to such action volunteered by the accused can and will be used as evidence against or in favor of the accused.

II. If the actions of the accused were influenced by drinking, this may affect the severity of the penalty imposed, but is in no way necessarily to be considered a compounding or mitigating factor.

III. The Judicial Board will rehear any case in which significant new evidence can be introduced. By a two-thirds vote the Board may decide to rehear such a case.

IV. All Judicial Board decisions are subject to review and possible revision by the Administration.

V. The decision can be picked up in the Office of the Dean of Undergraduate Men or the Dean of Freshmen following the hearing, at a time announced by the chairman.

VI. Appeals Procedure: Appeals may be instituted in accordance with the provisions specified in "Appeal Procedures for Undergraduate Colleges and Schools" which appears as Appendix C.

Social Regulations

During the academic year 1968-69, the West Campus Community Council adopted a set of "Guidelines for Social Legislation on West Campus," under which each living group was to establish and enforce its own social regulations. The "Guidelines" specify that regulations of each living group must be formulated and enforced in recognition of "the basic necessities of students, such as provisions for sufficient quiet and privacy for study and sleep during some reasonable part of the night and morning, as well as sufficient time and privacy for bathing and dressing." In addition, they express the Council's conviction that the social regulations and activities of each group must be "supportive of the general welfare of the total university community." Procedures and machinery are required for assuring that the regulations are adopted through "a democratic process" and for protecting the interests of individuals and minority viewpoints within each living group. In addition, each group is required to specify the means by which regulations were to be enforced, including judicial machinery for determining violations and assessing penalties. The whole of the "Guidelines" is based upon the premise that "living groups and the individuals they comprise will act responsibly when given authority over their own affairs."

Spring semester, 1969 was a period of experimentation under the new policy represented by the "Guidelines." Each living group adopted its own social regulations and enforcement procedures, and these were approved by the WCCC. By the end of the semester, there was some evidence that the results were not always in conformity with the letter or spirit of the "Guidelines" and that the whole experiment should be evaluated by the Council in the fall semester. Until that evaluation is completed and any necessary corrective action is recommended and ap-

proved, living-group rules adopted in the spring, with the exception of those relating to all-freshmen houses, shall continue in effect. In the case of all-freshmen living groups, the following social regulations adopted in 1968 by the WCCC shall be in effect pending further recommendations by the WCCC:

Definition of a Social Function. A social function is defined as: (*a*) any social event, sponsored by a living group or student organization, which is held on West Campus; (*b*) any social event sponsored by a living group or student organization at which the expense, or a part thereof, is paid from the organization's treasury.

Registration of Social Functions. All social events are registered in the Office of the Dean of Men. Regular weekend social events must be registered by 4:00 p.m. on the Thursday before the event is to take place.

Responsibility for Social Functions. For every social function each living group will select a host committee which will be present and responsible for seeing that standards of propriety and good taste and all regulations are observed at all times. This committee should be made up of four men appointed for each specific occasion. The report of the host committee shall include a statement of any violations of these standards. Chaperons are not required for any social function though any group may secure them if it wishes. Freshman houses are expected to have a member of the house residential staff present at each off-campus function.

Women Guests in Men's Residences. Women may visit men's residences in accordance with the rules stated below.

1. *Lounges, Commons Rooms, and Chapter Rooms.* The following lounges are public areas and are open from 8:00 a.m. to 12:00 midnight Sunday through Thursday, and 8:00 a.m. to 1:30 a.m. on Friday and Saturday: The Freshman Lounge, House O; the Independent Lounge, House FF; and first floor lounges of Mirecourt and York Houses. (Mirecourt and York Houses may modify these regulations within the times stated.)

All fraternity Chapter Rooms and all Commons Rooms in independent and freshman houses are open to women visitors from 12:00 noon to 1:30 a.m. Saturday; 12:00 noon to 12:00 midnight Friday and Sunday; and 12:00 noon to 6:00 p.m. Monday through Thursday. Each house may modify these hours within the times stated.

On special occasions (such as after basketball games) the closing of Chapter and Commons Rooms may be changed to a later hour when authorized by the dean of men. Exceptions must be registered at least one day prior to the event. If sufficient interest is shown in advance, an extension may be granted to all houses, in which case an announcement will be made through the IFC, the AIH, and the freshman housemasters.

2. *Openhouses:* Each occasion for an openhouse must be registered. An affirmative vote of a majority of the living group's members shall be required for each occasion. Each living group requesting an open house shall register this decision on the appropriate form with the Office of the Dean of Men.

Undergraduate men are permitted women visitors in their rooms during properly registered openhouses within the following hours:

Friday—6:00 p.m. to 12:00 midnight.

Saturday—12:00 noon to 6:00 p.m.; 8:00 p.m. to 1:30 a.m.

Sunday—12:00 noon to 5:30 p.m.

Each house may modify these hours within the times stated above.

Any room in which a woman is visiting must have the entrance way completely open.

Other Regulations

Motor Vehicles. In accordance with the policy of the men's undergraduate colleges, freshmen may not have in their possession or operate motor vehicles (including motorcycles and motorbikes) at the University during the fall semester. Vehicles may not be stored in the vicinity or in a nearby town or city for use within Durham or for the purpose of taking trips outside the city limits.

Freshmen in the following categories may be exempted from this regulation after making written application to the Dean of Freshmen and receiving written permission to bring their cars:

a. Students living with their families in the city of Durham.

b. Students commuting daily to the University.

Upperclassmen, and freshmen in the spring semester, who wish to possess and operate motor vehicles at Duke may do so after registering them at the Traffic Office. Students under twenty-one years of age must have the written consent of parent or guardian before possessing and operating their own motor vehicles at Duke. A standard certificate of automobile liability insurance issued by a recognized company and evidencing coverage of at least $10,000 per person and $20,000 per accident for personal injury and $5,000 for property damage is also required. There is a registration fee for resident students of $30.00 per automobile or $10.00 per motorcycle, motorbike, or motor scooter for each academic year.

Vehicles must be registered annually at the beginning of the fall semester or, if a vehicle is acquired later, within five days after bringing it to the campus. If there is a change of status which requires that a new registration emblem be displayed or affects the registration fee, a student must re-register his vehicle within five days.

Policy on Use of Segregated Facilities

It shall be University practice not to discriminate in any way on the basis of race, creed, or national origin. This covers official activities sponsored, financed, and controlled by University personnel and campus organizations, whether these activities are held on- or off-campus. If they are held off-campus, they must not utilize facilities where discrimination is practiced. Naturally the University will not attempt to dictate to individual students, faculty members, or private groups how they should conduct their personal affairs.

The above policy applies to all social functions sponsored by undergraduate residence hall and campus organizations. The failure of student groups to comply with this policy may result in suspension of their social privileges. Repeated offenses by campus organizations or fraternities could result in the revocation of their charters or, in the case of independent or freshman houses, the dissolution of the living group.

Possession and Use of Alcoholic Beverages

In the State of North Carolina it is unlawful for persons under twenty-one years of age to purchase, possess, or use certain beverages containing alcohol. The University neither condones the illegal purchase or use of such beverages by its students nor countenances the serving of them to students under age. Moreover, it prohibits the consumption by any person or persons of these beverages on the University's grounds or in its nonresidential buildings. Within these limits, the University is prepared to leave to the individuals directly concerned the decision whether or not lawfully to possess or drink the beverages in question in the residential unit. The living group remains responsible for the general tone of each area of residence, however, and may by majority vote adopt house regulations more limiting than the laws of the State.

See Appendix D for pertinent sections of the General Statutes of North Carolina regarding the possession and use of alcoholic beverages.

Policy and Rules on Drugs

Duke University prohibits its members to possess, use, or distribute illegal drugs, including opiates, barbiturates, amphetamines, marijuana, and hallucinogens, except for legally authorized medical purposes and scientific research. Both federal and North Carolina laws forbid unauthorized possession and distribution of drugs of the classes specified. In addition, the presence and use of many of these drugs within the Uni-

versity community are contrary to the intellectual and educational purposes for which the University exists.

The University recognizes that ignorance or innocence concerning such drugs threatens the safety of members of its community. It therefore seeks to provide as much information as it can concerning the consequences of harmful drugs. The University recognizes also that the illicit use of drugs may reflect emotional problems and is prepared to assist its members involved in their use through medical and psychiatric counseling. Nevertheless, the University considers a violation of the drug prohibition a serious matter and reserves the right to take action appropriate to the circumstances of each case.

Action taken by the University in all cases of drug violation will be guided by a concern both for the emotional and physical welfare of the person involved and for the maintenance of a suitable educational environment for all members of the University.

Rules governing violations are as follows:

1. Alleged violations of the policy stated in paragraph 1 above will be adjudicated by the appropriate deans, or in the case of non-students, by comparable authorities and their appointed delegates. It is expected that deans' staffs will exercise professional judgment in referring indicated cases to University health and counseling services, in keeping with paragraphs 2 and 3 of this policy statement.

2. The two grounds which may constitute occasion for the assessment of penalties are:

   a. conviction of a member of the University on a drug charge by a court of law.

   b. a finding by the appropriate University tribunal in conformity with the principle of due process, of sufficient evidence that a member of the University has violated the drug policy.

3. The maximum penalty to be imposed within the University upon a student for the possession or use of marijuana shall be suspension; for the possession or use of other illegal drugs, or the distribution of any illegal drug, the maximum penalty of the University is expulsion. Other members of the University shall be liable to appropriate comparable penalties.

See Appendix E for pertinent sections of federal and North Carolina laws regarding the possession, use, and distribution of drugs.

Policy and Regulations on Pickets, Protests, and Demonstrations

Statement of Policy. Duke University respects the right of all members of the academic community to explore and to discuss questions which interest them, to express opinions publicly and privately, and to join together to demonstrate their concern by orderly means. It is the

policy of the University to protect the right of voluntary assembly, to make its facilities available for peaceful assembly, to welcome guest speakers, and to protect the exercise of these rights from disruption or interference.

The University also respects the right of each member of the academic community to be free from coercion and harassment. It recognizes that academic freedom is no less dependent on ordered liberty than any other freedom, and it understands that the harassment of others is especially reprehensible in a community of scholars. The substitution of noise for speech and force for reason is a rejection and not an application of academic freedom. A determination to discourage conduct which is disruptive and disorderly does not threaten academic freedom; it is, rather a necessary condition of its very existence. Therefore, Duke University will not allow disruptive or disorderly conduct on its premises to interrupt its proper operation. Persons engaging in disruptive action or disorderly conduct shall be subject to disciplinary action, including expulsion or separation, and also to charges of violations of law.

Rule. Disruptive picketing, protesting, or demonstrating on Duke University property or at any place in use for an authorized University purpose is prohibited.

Definition. Disruptive picketing, protesting, or demonstrating consists of any conduct which directly interferes with the orderly operation of the University or with the lawful pursuits of any member of the University community or any person otherwise on University premises with the express or implied permission of the University.

Without in any way limiting the scope of the foregoing definition, the following actions are specifically prohibited:

a. Unauthorized occupancy of University facilities or buildings.
b. Interference with the rights of students, faculty or staff and persons who are guests of the University to gain access to any University facility for the purpose of attending classes, participating in interviews, conference or any other proper purpose.
c. Interference with the orderly operations of the University, by breach of the peace, physical obstruction or coercion, or by noise, tumult, or other forms of disturbance.
d. Interference with University traffic, be it pedestrian or vehicular traffic.

Implementation. Violation of the rule stated above shall lend to appropriate disciplinary action. Charges of such violations may be brought by the president or his delegated representatives. Lack of prompt response to a cease and desist order by the president or his representative will constitute an aggravation of the offense.

Hearing and Appeal. Hearing Committees will be appointed by the Executive Committee of the Academic Council to judge initially and ex-

peditiously all cases involving students which arise under the regulations that pertain to pickets, protests and demonstrations. The Hearing Committees are to be regarded as a temporary arrangement subject to re-examination after the report of the Committee on Judicial Procedures is at hand.

A Hearing Committee will consist of two faculty members, one dean, and two students. These students will be selected from members of the judicial boards or governments in the undergraduate, graduate, or professional colleges or schools. The chairman of the Hearing Committee will be designated by its members. The Hearing Committee will conduct its proceedings in accordance with academic due process.

The decision of the Hearing Committee shall be final if the accused is exonerated or if there is no appeal. In other cases appeal may be taken to the President, in which case such appeal shall be solely on the record of the proceedings before the Hearing Committee. Argument on appeal shall be on written submission, but the president may in addition require oral argument.

The procedures for faculty members will follow the arrangements provided under the regulations for the guarantee of tenure in the University. The procedures for non-academic employees will be as provided in the *Personnel Handbook*.

Amendments. These regulations on Pickets, Protests, and Demonstrations may be changed or amended by the University at any time but any such change or amendment shall be effective only after due notice or publication. These regulations supersede any regulations heretofore issued on the subject.

Regulations Regarding Firearms, Ammunition, and Explosives

Students bringing firearms to Duke must register them in the Office of the Dean of Men or Dean of Women, as appropriate. Ownership and use of firearms, ammunition or explosives must comply with all local and State laws. Illegal possession or use of such items at Duke may result in expulsion from the University.

The State of North Carolina requires that all firearms having a barrel length of eighteen inches or less must be registered at the county courthouse. In Durham, this registration is made at the Office of the Clerk of the Superior Court.

Students are not permitted to keep firearms, ammunition or explosives in their rooms. All firearms belonging to undergraduates must be stored in the West Campus Security Office. Instructions for the storage and use of firearms are given at the time of their registration in the office of the appropriate dean.

Campus Trespass

Except for through traffic using the drive between the East and West campuses, the Woman's College campus is closed at night to non-residents after 2:00 a.m., unless the visitor is accompanying a resident woman student as she returns to the campus.

Violators are liable to arrest by Campus Security Officers, who are deputies of the Sheriff of Durham County, and to prosecution as trespassers.

Perkins Library Control Desk Inspections

In order to guarantee the orderly functioning of the Perkins Library, for the benefit of all members of the University community, Control Desk Attendants have been established at the Library's principal exit and authorized to examine all books and other library materials persons leaving the building may be carrying in hands, briefcases or bags to determine if they are properly charged. Anyone who refuses to permit his books to be examined may be denied further use of the Library. Student offenders will be reported to the appropriate dean of the University, who is authorized to refer such offenders to judicial boards or to take independent disciplinary action, including penalties, up to and including suspension, appropriate to the seriousness of the offense.

Policy and Regulations Concerning the Privacy of Students' Rooms

In the academic year 1968-69 the University approved the following policy and accompanying regulations relating to the privacy of students residing in University dormitories. Originating in a resolution adopted by the Legislature of the Associated Students of Duke University and ultimately formulated through consultations among students and administrative officers, the policy and regulations reflected an effort to satisfy the legitimate needs of students for privacy in the use of their dormitory rooms and the University's need to assure the safe and lawful use of such facilities in a manner consistent with the purposes of an academic community and with the legal obligations of the University toward its students. During further review of this policy it is evident that certain features of the regulations raise additional questions of a legal and administrative nature which should be resolved in a review of the policy early in the fall semester of 1969 by appropriate student, faculty, and administrative bodies.

Policy. Students who reside in University dormitories are assured the privacy of their rooms and freedom from the admission into or search of their rooms by any unauthorized persons; however, the University is obligated to maintain reasonable surveillance of the residential areas to

promote an environment consistent with the aims of an academic community. To foster these conditions the following Regulations are in effect:

1. No person shall enter a student's room without:
   a. permission of the students, or
   **b.* written authorization from the Dean of Men, the Dean of Women, the Dean of the School of Nursing, or persons publicly designated to act as their representatives, or
   c. a properly drawn legal search warrant, or
   d. emergency situations (provided for in section 4, below).

2. Written authorization from the deans must specify the reasons for believing such a search is necessary, the objects sought, and the area to be searched. An effort must be made to conduct the search in the presence of the student.

3. The request for a search, if approved by the designated authorities, shall be kept in records with the authorization until the time of the student's graduation and shall be available to the student for examination. These records will be kept completely separate from the student's permanent record. Should the search figure in any trial proceeding within the University, the authorization shall be attached to the trial record; if no action is taken following an authorized search, notation of this fact shall be filed with the authorization.

4. No general searches shall be conducted except with the possession of the written authorization of these above mentioned deans, stating the reasons for the search and the specific goal, or under circumstances deemed to be of extreme emergency by these deans or the officer on each campus in charge of maintenance.

5. In the absence of a written request to the contrary by the student, maids may enter a student's room in actual performance of their duties. It is understood that housekeepers are not, for the purpose of this provision, considered maids; housekeepers may, however, enter the room for the sole purpose of employee supervision. No personnel of the University shall require or request maids, or any person authorized by the student to enter his room, to describe a student's room in any way. The University reserves the right to use dormitory rooms, after prior notification of the regular occupant(s), during announced vacations for special guests.

6. The University shall designate no more than two limited periods each semester for room inspection for the purpose of assessing damage to University property or violations of housekeeping regulations. The University shall notify the student body of its intention in this regard one week in advance. Changes in room occupancy will occasion a special inspection of any or all rooms involved. At the time of the inspection, the student may or may not choose to leave the inspector alone in his room.

* No authorization is required for housekeeping, custodial, and maintenance personnal to enter students rooms for the performance of normal custodial, housekeeping, and maintenance duties.

Financial Information and Regulations

Fees paid by students cover only a part of the cost of their instruction and of the operations of the University. Income from endowment and contributions from foundations, alumni and other friends cover the balance, which constitutes more than half of the total cost.

Registration Fee and Deposits for New Students

Upon notification of acceptance new students are required to pay, by a deadline, a non-refundable first registration fee of $20.00 and to make a deposit of $50.00. The deposit will not be refunded to accepted applicants who fail to matriculate.

For matriculated students, $25.00 of the $50.00 deposit made at the time of acceptance serves as a continuing room deposit and the remaining $25.00 as a continuing registration deposit. The $25.00 preregistration deposit is refunded to students (1) who are required by the University to withdraw, (2) who are graduated, or (3) who request the refund at the time of preregistration, thus indicating their intention not to return for the following semester. The $25.00 room deposit is refunded within 30 days after a student's graduation or upon withdrawal from one of the residences, provided the student has given written notice to the Office of the Dean of Men or the Dean of Women by August 1 to cancel a

reservation for the fall semester, and not later than January 15 for cancellation of a reservation for the spring semester.

Annual Fees and Expenses

Tuition and general fee	$2,000.00
Room rent (see section below)	$285.00 to $500.00
Food (see pages 51-52)	$550.00 to $625.00
Books and supplies (estimated)	$130.00

Additional charges will be made for student government dues, and for such extras as election of courses in golf or digital computation, the registration of a car and damages to University property caused by the student.

Miscellaneous expenses depend upon the tastes and habits of the individual. Travel costs, clothing purchases, and other major expenditures should be added to this estimate.

The inclusive fee due each semester is payable to the Bursar upon receipt of the University's statement but in every case not later than the day of registration. Information about insured tuition payment plans acceptable to the University may be obtained from the Office of the Bursar.

After the day of registration no refund of tuition, general fee or room rent will be made. If a student on a board contract withdraws during the first six weeks of a semester, a board refund is made on a pro rata basis.

Room Rent

The Woman's College: Room rent in The Woman's College dormitories is $480.00 per year for a single room and $360.00 per year for a double room.

Trinity College and The School of Engineering: Charges for a year's rental in non-air-conditioned dormitories in Kilgo, Craven, Crowell, Few, and Wannamaker Quadrangles are as follows: for a single room, $445.00; for occupancy in a double room, $335.00; and for occupancy in a triple room, $285.00. In the new residence halls and in other air-conditioned dormitories, charges for a year's rental are: for a single room, $500.00; and for occupancy in a double room, $375.00 per year.

Cost of Food

See the explanation of dining arrangements and food costs on pages 51-52.

Unpaid Bills

Until a student has settled with the Bursar for all indebtedness, his or her records are not released nor is the student considered a candidate for continuation or graduation.

The Bursar sends bills directly to the student unless requested in writing that they be sent to the student's parents or guardians.

Financial Aid, Loans, Grants, and Scholarships

Loans, grants-in-aid, and scholarships are available to entering freshmen and to continuing students. Entering freshmen apply through the Office of Admission (see "Student Aid" in the *Bulletin of Undergraduate Instruction*). Continuing students may apply for loans through the University Loan Committee, 102B Allen Building, not later than July 1 preceding the academic year for which assistance is requested.

Application for grant-in-aid or renewal of a scholarship should be made to the Office of Undergraduate Financial Aid, 614 W. Campus Drive. Applications for scholarships administered by The Woman's College to upperclass students must be submitted to the office of the dean of The Woman's College by March 1 prior to the year of the award.

In case of financial emergency, students should consult with the dean of the appropriate school or college or the Director of Undergraduate Financial Aid.

Appendix A

Community Council of the Woman's College

Constitution

I. The purpose of the Community Council of The Woman's College (CCWC) is to act on matters which are of concern to the Woman's College community.

II. Powers.
Proposals passed by the CCWC shall be forwarded to the dean of the Woman's College for her written approval or veto. This answer shall come within fifteen days. If a proposal is vetoed, the decision may be appealed to the Provost upon two-thirds vote of the Council.

III. Membership.
The membership of the CCWC shall consist of representatives of the University concerned with the Woman's College community. Therefore, it shall include three faculty, two house counselors, three administrators, and five students.

IV. Chairman.
The Chairman shall be elected from the membership of the CCWC. He or she shall appoint a secretary from the membership and committee members as needed and provided by the bylaws. The Chairman or his designate shall call and preside over all meetings.

V. Proposals may be brought to the Council from any member of the community served by the Council. The Council shall consider and acknowledge all proposals submitted.

Bylaws

Article I—Committees.

Section 1. Standing Committees, composed of the members of CCWC

and other members of the University community, may be established when deemed necessary by the Council. Standing committee members shall be appointed by the Chairman of the Council with the approval of the members of the Council.

Section 2. Ad hoc committees may also be established and their members appointed by the Council in a similar manner.

Article II—Elections and appointments shall be completed by the first week in October.

Section 1. Faculty—There shall be three faculty members, at least two of whom shall be associated with the Woman's College dormitories. The two faculty members associated with dormitories shall be appointed from a list of six nominees submitted by the WRC (Women's Residence Council). The third faculty member shall be appointed from lists supplied by the WRC and the administrative staff of The Woman's College. The appointments shall be made by the Chairman of the WRC and the Dean of The Woman's College, and the faculty members shall serve for one year.

Section 2. House Counselors—There shall be two house counselors elected by the group of house counselors.

Section 3. Administration—The three administrators shall be elected by the administrative staff of the Woman's College.

Section 4. Students—There shall be five student members. Two shall be elected at-large by the members of the AWR (Association of Women's Residences). One shall be a representative from the WRC, another shall be the ASDU vice-president. The fifth student member shall be the Chairman of the Woman's College Judicial Board or her designated representative.

Article III—There shall be at least three meetings each semester.

Article IV—Procedure in Meetings.

Section 1. Procedure in meetings not specified in the Constitution and Bylaws shall be governed by *Robert's Rules of Order.*

Section 2. Nine members, including at least one member of each representative group of the community, shall constitute a quorum for all meetings of the Council.

Section 3. A simple majority vote is sufficient for all questions on which the Constitution does not require a larger proportion of votes unless the results represent block voting of student or non-student constituents.

Section 4. Meetings shall be open to the University community. The

number of outside participants may be limited (but not to fewer than five) by vote of the Council. (Representatives of the Chronicle and WDBS will be given preference.) Outside participants may take part in the discussions but may not vote.

Article V—Amendments to the Bylaws.

The Bylaws may be amended by a two-thirds vote of the members of the Council. The proposed amendments must have been considered at a previous meeting of the Council before being brought to a vote.

Appendix B

West Campus Community Council Constitution

Definition. The West Campus Community Council (WCCC) is a body comprised of students, faculty, residential staff, and administration. Its purpose is to deliberate and recommend policy on matters of concern to the West Campus community.

Powers. Any recommendations or proposals voted by the WCCC shall be sent the Dean of Trinity College for written approval or disapproval. This should come within fifteen days of the submission of the Council's action to the Dean. If a proposal is disapproved, the decision may be appealed to the Provost upon two-thirds vote of the Council.

Membership. As the West Campus Community Council endeavors to represent all members of the University community who have a lively concern for the residential situation on the men's campus, it includes members of the faculty, administration, and residential staff, as well as students.

Faculty—four members shall be chosen by the Committee on Committees of the Undergraduate Faculty Council from persons to be nominated as follows: the head of the Interfraternity Council shall nominate one or more faculty fellows associated with fraternity sections one of whom shall be chosen; the head of the Association of Independent Houses shall nominate one or more faculty fellows associated with independent living groups one of whom shall be chosen; the president of the freshman class shall nominate one or more faculty fellows associated with freshmen houses one of whom shall be chosen. The Committee on Committees shall appoint an at-large representative from the Trinity College faculty fellows.

Administration—a dean in Trinity College, a dean or faculty member in the School of Engineering; the Dean of Freshmen, and the Dean of

Undergraduate Men. The Dean of Trinity College shall be an *ex officio,* non-voting member of the Council.

Students—A.S.D.U. Vice-President for West Campus; the President of Freshmen Class; the President of the Engineering Student Government; the President of the Interfraternity Council; the President of the Association of Independent Houses; the Chairman of the Men's Judicial Board; and a member at large from the West Campus student body. These men may, with the approval of the Chairman of the Council, send a representative of their groups to serve during their terms of office. Service on the Council shall be for the entire academic year.

Residential Staff—The Supervisor of the Men's Residences; a housemaster from a freshman dormitory; and a resident from one of the independent houses. These men will be chosen with the approval of Dean of Undergraduate Men, President of the Freshman Class, and the chairman of A.I.H.

Chairman. The Chairman shall be elected from the membership of the Council at the first meeting of the academic year. He will call meetings and preside over them, but will not vote except in the case of a tie. He has the authority to appoint subcommittees when he deems it necessary.

Written proposals may be brought to the Council from any member of the community served by the Council. The Council is obligated to consider all proposals submitted.

Appendix C

Appeal Procedures for Undergraduate Colleges and Schools

Section 1.

1. The University Review Committee shall consist of nine members to be chosen from the faculty for staggered three-year terms.

2. The Vice Provost and Dean of Undergraduate Education shall select and appoint the members of the Committee and name the chairman and vice chairman.

(*a*) Selection shall be based on the Vice Provost's evaluation of a persons' overall qualifications to serve on such a committee and not on his or her affiliation with a particular college or school.

(*b*) Faculty members serving on inferior disciplinary tribunals shall be ineligible for appointment.

(*c*) The power to appoint implies the power to fill vacancies as they occur for the balance of a term; but it does not imply the power to appoint an alternate committee. Situations in which the regular Committee cannot be convened are covered in Sec. 2.

Section 2.

1. Under normal circumstances, the University Review Committee shall hear and decide cases according to the procedures described in this document.

(*a*) A quorum of this Committee shall be 7 members.

(*b*) The concurrence of a majority of the members shall be necessary to decide a case.

(*c*) If the Committee is evenly divided on a case, the Vice Provost, after reviewing the record shall decide the case.

2. Under unusual circumstances, whereby a quorum of the regular

Committee cannot be convened within a reasonable length of time, the Vice Provost shall adjudicate the case according to the procedures normally followed by the Committee with or without the assistance of any Committee members who may be available.

Section 3.

1. The University Review Committee shall hear on appeal cases heard originally by the judicial tribunals of the Undergraduate Colleges and Schools.
2. The Committee shall hear only cases involving suspended-suspension or a penalty of greater severity.
3. The grounds for appeal shall be as follows:
   (*a*) Procedural error.
   (*b*) Incompatibility of the verdict with the evidence.
   (*c*) Excessive penalty not in accord with "current community standards."
   (*d*) New evidence of a character directly to affect the verdict but on which the original tribunal had refused a new hearing.
   (*e*) Error in applying or interpreting the rule under which the case was originally tried.

Section 4.

1. In cases appealed on the basis of procedural error, the Committee may either uphold the lower tribunal or return the case with directions to conduct a new hearing.
2. In cases appealed on the ground that the evidence does not support the verdict, the Committee may either uphold the lower court or reverse its decision and dismiss the case.
3. In cases appealed on the ground that the penalty imposed is excessive (see Sec. 3, Par. 3c), the Committee may either uphold the penalty or reduce it.
4. In cases appealed on the grounds of new evidence that a lower tribunal has refused to hear, the Committee must decide on the relevance of the new evidence to the original decision (see Sec. 3, Par. 3d). It may either reject the evidence or accept it and direct the lower tribunal to conduct a new hearing.
5. In cases appealed on the grounds of errors of law (Sec. 3, Par. 3e) the Committee may either uphold or overrule the lower tribunal or return the case with orders to conduct a new hearing.

Section 5.

1. A defendant wishing to appeal is responsible for filing his appeal.
2. A written notice of intention to appeal must be filed with the Vice Provost and Dean of Undergraduate Education within 72 hours from the time at which the defendant was notified in writing of the verdict or has

been refused in writing a hearing on the basis of new evidence in an inferior tribunal.

3. A student found guilty of a serious offense as defined in Sec. 3, Par. 2 shall be given a copy of this document, entitled "Appeals Procedures for Undergraduate Colleges and Schools," and his attention directed in writing to the sections and subsections describing his rights.

4. The defendant will be given at least 48 hours, after filing his notice of intention to appeal, to file with the Vice Provost his written statement containing the ground(s) for appeal and arguments. This time limitation may be waived or extended upon petition to the Vice Provost.

5. The defendant shall have the right to be assisted by an advisor of his choice in preparing his appeal.

Section 6.

1. The function of the University Review Committee shall be to review verdicts of the highest tribunals having jurisdiction in the undergraduate schools and colleges. In no case shall it conduct a *de novo* hearing of testimony or other evidence.

2. The appeal shall be based primarily on a written transcript of the previous hearings. This shall contain all testimony and other evidence presented. The documents transmitted by the lower tribunals shall include the tapes upon which the transcript is based.

3. The inferior tribunals shall provide for the Committee written opinions, containing the reasoning upon which the majorities based their verdict and any dissenting opinions of members thereof.

4. The Vice Provost shall submit to the Committee the defendant's written statement containing the ground(s) for his appeal and his arguments filed pursuant to Section 5, Par. 4 above.

5. The defendent shall be allowed to make an oral statement to the Committee to amplify his written arguments. The Committee may question the defendant at this time about his oral statement or his written statement, but shall confine itself to the issues on appeal. These additional statements and arguments shall be recorded.

6. The Committee may call a representative of the inferior tribunal to answer questions concerning issues raised by the defendant's written or verbal statements or concerning written opinions submitted in accordance with Par. 3 above. This material shall likewise be incorporated in the record.

7. In cases where the Committee reverses an inferior tribunal or directs it to conduct a new hearing, it shall submit to the lower tribunal a detailed written opinion as to its reasoning. This opinion would be similar to that prescribed in Par. (3) of this section.

Section 7.

1. Decisions of the University Review Committee or of the Vice Provost acting in lieu of the regular Committee shall be promptly communicated to the appropriate dean; and forthwith to the appellant with a copy to the lower tribunal.

Section 8.

1. Decisions of the University Review Committee or of the Vice Provost acting in lieu of the regular Committee may be appealed directly to the President of the University.

Section 9.

1. The term Vice Provost and Dean of Undergraduate Education shall include not only the person appointed to the office but also any other person for the time being duly performing the functions of the office.

Appendix D

Sections of the General Statutes of North Carolina Regarding the Possession and Use of Alcoholic Beverages

G.S. 18-90.1. Sale to or Purchase by Minors.

It shall be unlawful for:

1. Any person, firm or corporation knowingly to sell or give any of the products described in G.S. 18-64 to any minors under 18 years of age.
2. Any minor under 18 years of age to purchase or possess, or for anyone to aid or abet such minor in purchasing any of the products described in G.S. 18-64.
3. Any person, firm or corporation knowingly to sell or give any of the products described in G.S. 18-60 to any minor under 21 years of age.
4. Any minor under 21 years of age to purchase or possess, or for anyone to aid or abet such minor in purchasing any of the products described in G.S. 18-60.

G.S. 18-64. Definitions.

The term "beverages" as used in this article shall include:

1. Beer, lager beer, ale, porter, and other brewed or fermented beverages containing one-half of one per cent (1%) of alcohol by volume but not more than five per cent (5%) of alcohol by weight as authorized by the laws of the United States of America.
2. Unfortified wines, as used in this article, shall mean wine of an alcoholic content produced only by natural fermentation or by the addition of pure cane, beet, or dextrose sugar and having an alcoholic content of not less than five per centum (5%) and not more

than fourteen per centum (14%) of absolute alcohol, the per centum of alcohol to be reckoned by volume, which wine has been approved as to identity, quality and purity by the State Board of Alcoholic Control as provided in this chapter.

The term "person" used in this article shall mean any individual, firm, partnership, association, corporation, or other groups or combination acting as a unit.

The term "sale" as used in this article shall include any transfer, trade, exchange or barter in any manner or by any means whatsoever, for a consideration.

G.S. 18-60. Definition of "Alcoholic Beverage."

The term "alcoholic beverage," as used in this article, is hereby defined to be and to mean alcoholic beverages of any and all kinds which shall contain more than fourteen per centum of alcohol by volume, and this article is not intended to apply to, or regulate, the possession, sale, manufacture or transportation of beer, wines or ales containing a lower alcoholic content than above specified, and whenever the term "alcoholic beverages" is used in this article, it shall be construed as defined in this section.

Appendix E

Statutes of North Carolina Pertaining to the Possession and Use of Certain Drugs

Under the provisions of G.S. 90-87 (General Statutes of North Carolina) (1)d. marijuana is defined as a narcotic drug.

G.S. 90-87 (9) further defines narcotic drugs: "Narcotic drugs" means coco (coca) leaves, opium, cannabis, peyote, mescaline, psilocybe maxicana, psilocybin, lysergic acid diethylamide, or other psychedelic drugs or hallucinogens, or any derivatives of any of these which possess hallucinogenic properties, and every other substance neither chemically nor physically distinguishable from them; and other drugs to which the federal narcotic laws may now apply; and any drug found by the State Board of Health after reasonable notice and opportunity for hearing, to have an addiction-forming or addiction-sustaining liability similar to morphine or cocaine, from the effective date of determination of such finding by said State Board of Health.

G.S. 90-88 provides that "it shall be unlawful for any person to manufacture, possess, have under his control, sell, prescribe, administer, dispense, or compound any narcotic drug except as authorized in this article." (The authorization referred to is with respect to licensed druggists, pharmacists, physicians, and others, who can legally possess and dispense narcotic drugs.)

G.S. 90-111. *Penalties for Violation.* (*a*) Any person violating any provision of this article or any person who conspires, aids, abets, or procures others to do such acts shall upon conviction be punished, for the first offense, by a fine of not more than one thousand dollars ($1,000.00) or be imprisoned in the penitentiary for not more than five years, or both, in the discretion of the court. For a second violation of this article, or where in case of a first conviction of violation of this article, the defendant shall previously have been convicted of a violation of any law of the United States, or of this or any other state, territory, or district, relating

to the sale or use or possession of narcotic drugs or marijuana, and such violation would have been punishable in this State if the offending act had been committed in this State, the defendant shall be fined not more than two thousand dollars ($2,000.00) and be imprisoned not less than five nor more than ten years. For a third or subsequent violation of this article, or where the defendant shall previously have been convicted two or more times in the aggregate of a violation of any law of the United States, or of this or any other state, territory, or district relating to the sale, use or possession of narcotic drugs or marijuana, and such violation would have been punishable in this State, the defendant shall be fined not more than three thousand dollars ($3,000.00) and be imprisoned in the penitentiary not less than fifteen (15) years nor more than life imprisonment.

(*b*) Upon conviction for a second or subsequent offense the sentence provided by this section shall not be suspended and probation shall not be granted unless the presiding judge shall find that the violation for which the defendant was convicted did not consist of peddling, selling, bartering, or otherwise distributing narcotics to others in violation of this article, or the possession of narcotics for the purpose of peddling, selling, bartering, or otherwise distributing narcotics to others in violation of this article. For the purpose of making the finding provided in this subsection before a sentence may be suspended, the defendant shall have the burden of proving that the violation for which he was convicted did not consist of peddling, selling, bartering, or otherwise distributing narcotics to others in violation of this article or the possession of narcotics for the purpose of peddling, selling, bartering, or otherwise distributing narcotics to others in violation of this article. The charge contained in the warrant or bill of indictment shall not be considered in making such finding for the purpose of suspending the sentence.

(*c*) If the offense shall consist of the sale, barter, peddling, exchange, dispensing or supplying of marijuana or a narcotic drug to a minor by an adult in violation of any provision of this article, such person shall upon conviction be punished by a term of not less than ten years nor more than life imprisonment and shall be fined not more than three thousand dollars ($3,000.00) for the first and all subsequent violations of this article, and the imposition or execution of sentence shall not be suspended, and probation shall not be granted.

Federal Statutes Pertaining to the Possession and Use of Certain Drugs

Marijuana is regulated by the Treasury Department and hallucinogenic drugs by the Bureau of Drug Abuse Control [Pure Food, Drug and Cosmetic Act] of the Department of Health, Education and Welfare. Different statutes apply to each.

1. Marijuana.

Title 26, Section 4741 imposes a tax on all transfers of marijuana of $1.00 per ounce or fraction thereof upon those who have paid a special license tax and who have complied with regulations. A tax of $100.00 per ounce or fraction thereof is imposed upon those who have not paid the special license tax and/or have not complied with the regulations.

Title 26, Section 4742(a)—It shall be unlawful for any person, whether or not required to pay a special tax and register under section 4751 to 4753 inclusive, to transfer marijuana, except in pursuance of a written order of the person to whom such marijuana is transferred, on a form to be issued by the Secretary or his delegate. [Except by one engaged in professional practice, by prescription, or by an officer of the U.S.]

Title 26, Section 4744 makes it unlawful for a person [without license and tax] to acquire or obtain marijuana and to be unable, after reasonable notice, to produce the order form for this marijuana required by Section 4742. Proof that a person has had possession of marijuana is presumptive evidence of guilt.

Title 26, Section 7237 (1966) fixes the following penalties for violation of Section 4742(a) and 4744:

Under Section 4744	*Fine*		*Imprisonment*
1st Conviction	Not more than $20,000.00	and/or	Not less than 2 or more than 10 yrs.
2nd Conviction	Not more than $20,000.00	and/or	Not less than 5 or more than 20 yrs.
3rd Conviction	Not more than $20,000.00	and/or	Not less than 10 or more than 40 yrs.
Under Section 4742			
1st Conviction	Not more than $20,000.00	and/or	Not less than 5 or more than 20 yrs.
Other Convictions	Not more than $20,000.00	and/or	Not less than 10 or more than 40 yrs.

If the offender has reached his 18th birthday at time of the offense of selling, bartering, or giving away an [illicit] drug or marijuana to one *not* 18, or conspiring to do so, the imprisonment is not less than 10 or more than 40 years and/or a fine of not more than $20,000.00.

2. Hallucinogenic Drugs.

Title 21, Section 321(V), (1966)—The term "depressant or stimulant drug" means . . . any substance which the Secretary [Health, Education and Welfare], after investigation, has found to have, and by regulation designated as having, a potential for abuse because of its depressant and stimulant effect on the central nervous system or its hallucinogenic effect; except the Secretary shall not designate under this paragraph . . . mari-

juana as defined in Section 4761. [This section defines marijuana as marijuana and practically all of its components, from seed to dried leaf.]

Title 21, Section 360(a), 7(c), (1966)—No person, other than an exempt person [see next paragraph] shall possess any depressant or stimulant drug otherwise than for personal use or for a member of his household or for his animal.

[An exempt person, referred to in this section, is one in the legal business of selling, treating with, or transporting these drugs. Also, one who is using the drug in research, teaching, or chemical analysis and not for sale.]

Title 21, Section 360(a), 7., (1966)—No person, unless licensed or authorized and acting in the ordinary and authorized course of his business, profession, occupation or employment . . . shall sell, deliver, or otherwise dispose of any depressant or stimulant drug to any other person.

Title 21, Section 333 (1966) fixes the following penalties:

	Fine		*Imprisonment*
1st Conviction	Not more than $1,000.00	and/or	Not more than 1 yr.
2nd Conviction	Not more than $10,000.00	and/or	Not more than 3 yrs.

Any person who has attained his 18th birthday when the offense was committed who sells or disposes of depressant or stimulant drugs to one who has not attained his 21st birthday is subject to these penalties:

	Fine		*Imprisonment*
1st Conviction	Not more than $5,000.00	and/or	Not more than 2 yrs.
2nd Conviction	Not more than $15,000.00	and/or	Not more than 6 yrs.

1969

JULY

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27	28	29	30	31		

AUGUST

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SEPTEMBER

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NOVEMBER

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DECEMBER

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1970

JANUARY

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FEBRUARY

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MARCH

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APRIL

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MAY

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JUNE

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JULY

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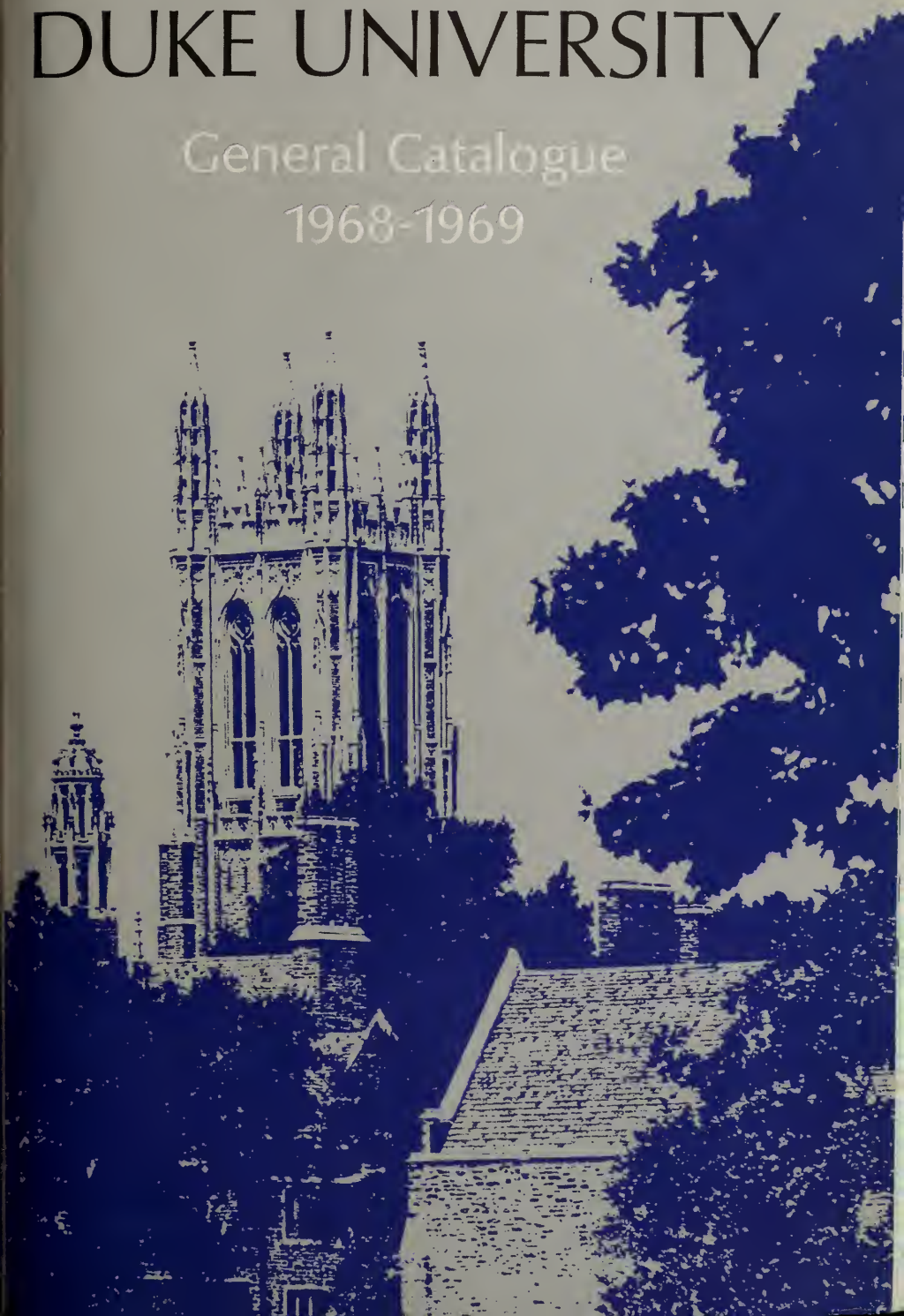
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BULLETIN OF DUKE UNIVERSITY

General Catalogue

1968-1969



Annual Bulletins

For *Bulletin of Information for Prospective Students*, apply to Office of Undergraduate Admissions, Duke University, Durham, N. C. 27706

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For *Bulletin of the School of Nursing*, apply to the Dean of the School of Nursing, Duke University, Durham, N. C. 27706

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For *Bulletin of Faculty Publications*, apply to Office of the Vice Provost, 207 Allen Building, Duke University, Durham, N. C. 27706

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BULLETIN OF DUKE UNIVERSITY

General Catalogue

Academic Year 1968-1969

Announcements for 1969-1970

Durham, North Carolina 1969

Volume 41 June 1969 Number 8-C.

The **Bulletin of Duke University** is published monthly except in July, August, September, and December by Duke University, Duke Station, Durham, N. C. 27706. Second-class postage paid at Durham, N. C.

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The School of Engineering

The School of Forestry

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Physicians Assistant Program

The Summer Session

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University Calendar 1969-1970

September **1969**

16 Tuesday, 7:30 p.m.—Orientation begins: assemblies for all new students entering Trinity College, The Woman's College, the School of Engineering, and the School of Nursing

18 Thursday—Registration and matriculation of all students of Trinity College, The Woman's College, the School of Engineering, and the School of Nursing, who have not preregistered

20 Saturday—Final registration of preregistered students

21 Sunday—University convocation

22 Monday—Fall semester classes begin

November

1 Saturday—Last day for reporting six-weeks grades

10–13 Preregistration for Spring Semester 1970

26 Wednesday, 12:30 p.m.—Thanksgiving recess begins

December

1 Monday, 8:10 a.m.—Classes are resumed

11 Thursday—Founders' Day

20 Saturday, 12:30 p.m.—Christmas recess begins

January **1970**

5 Monday, 8:10 a.m.—Classes are resumed

10 Saturday, 12:30 p.m.—Fall semester classes end

12–13 Monday, Tuesday—Fall semester reading period

14 Wednesday—Final examinations begin

23 Friday—Final examinations end

29 Thursday—Registration and matriculation of new students

30 Friday—Last day for matriculation for the spring semester

February

2 Monday—Spring semester classes begin

March

11 Wednesday—Last day for reporting six-weeks grades

21 Saturday, 12:30 p.m.—Spring recess begins

30 Monday, 8:10 a.m.—Classes are resumed

April

13–16 Monday-Thursday—Preregistration for Summer Session and Fall semester 1970

24–25 Friday-Saturday—Spring weekend. Classes are omitted

May

14 Thursday, 5:00 p.m.—Spring semester classes end

15–16 Friday-Saturday—Reading period

18 Monday—Final examinations begin

27 Wednesday—Final examinations end

30 Saturday—Commencement begins

31 Sunday—Commencement Sermon

June

1 Monday—Graduating exercises

History

Duke University is built about a group of colleges which have their roots deep in the past. It was founded more than one hundred years ago when a number of earnest citizens from Randolph and adjacent counties assembled in a log school house to organize an educational society. They wished to provide lasting support for the local academy founded a few months before by an energetic son of North Carolina, Brantley York.

Moved by "no small share of philanthropy and patriotism," these men set forth their belief "that ignorance and error are the bane not only of religious but also of civil society" and that they "rear up almost an impregnable wall between man and the happiness he so ardently pants after." On that basis they formally adopted a constitution for the Union Institute Society. Thus in February, 1839, the academy became Union Institute. Twelve years laters it was reorganized as Normal College expressly to train teachers. In order to expand its operations still further, the school was again reorganized in 1859 as Trinity College, a small liberal arts college. In 1892 it moved from the fields of Randolph County to the growing city of Durham. Thirty-two years later the College grew into Duke University. With increasing enrollment and the development of specialized needs, The Woman's College was formed in 1925 and the College of Engineering in 1938.

As the University developed around the core of the colleges, the Graduate School of Arts and Sciences expanded in number of students and in areas of instruction and research; the School of Law of Trinity College became the Duke University School of Law; and other professional schools were established. The Divinity School was organized in 1926, the School of Medicine and the School of Nursing in 1930, and the School of Forestry in 1938.

From academy to university the basic principles have remained constant. The University motto, *Eruditio et Religio*, reflects a fundamental faith in the union of knowledge and religion, the advancement of learning, the defense of scholarship, the love of freedom and truth, a spirit of

tolerance, and a rendering of the greatest service to the individual, the state, the nation, and the church. Through changing generations of students the objective has been to encourage each individual to achieve to the extent of his capacities an understanding and appreciation of the world in which he lives, his relationship to it, his opportunities, and his responsibilities.

Government

1. The Indenture of Trust by Which the University Was Created

Among the provisions of James B. Duke's Indenture of Trust was an educational institution to be known as Duke University, to the building and support of which he made provision at the time of execution of the Indenture and later by additions thereto by the operation of his Will. In respect to Duke University the Indenture contains the following provisions:

I. (In Article FOURTH) The Trustees hereunder are hereby authorized and directed to expend as soon as reasonably may be not exceeding Six Million Dollars of the corpus of this trust in establishing at a location to be selected by them within the State of North Carolina an institution of learning to be known as Duke University, for such purpose to acquire such land and erect and equip thereon such buildings according to such plans as the Trustees may in their judgment deem necessary and adopt and approve for the purpose to cause to be formed under the laws of such state as the Trustees may select for the purpose a corporation adequately empowered to own and operate such properties under the name of Duke University as an institution of learning according to the true intent hereof, and convey to such corporation when formed the said lands, buildings and equipment upon such terms and conditions as that such corporation may use the same only for such purposes of such universities and upon the same ceasing to be so used then the same shall forthwith revert and belong to the Trustees of this trust as and become a part of the corpus of this trust for all the purposes thereof.

However, should the name of Trinity College, located at Durham, North Carolina, a body politic and incorporate, within three months from the date hereof (or such further time as the Trustees hereof may allow) be changed to Duke University, then, in lieu of the foregoing provisions of this division "FOURTH" of the Indenture as a memorial to his father,

Washington Duke, who spent his life in Durham and whose gifts, together with those of Benjamin N. Duke, the brother of the party of the first part, and of other members of the Duke family, have so largely contributed toward making possible Trinity College at that place, he directs that the Trustees shall expend of the corpus of this trust as soon as reasonably may be a sum not exceeding Six Million Dollars in expanding and extending said University, acquiring and improving such lands, and erecting, removing, remodeling and equipping such buildings, according to such plans, as the Trustees may adopt and approve for such purpose to the end that said Duke University may eventually include Trinity College as its undergraduate department for men, a School of Religious Training, a School for Training Teachers, a School of Chemistry, a Law School, Co-ordinate College for Women, a School of Business Administration, a Graduate School of Arts and Sciences, a Medical School and an Engineering School, as and when funds are available.

II. (In Article FIFTH) Thirty-two per cent of said net amount not retained as aforesaid for addition to the corpus of this trust shall be paid to that Duke University for which expenditures of the corpus of the trust shall have been made by the Trustees under the "Fourth" division of this Indenture so long as its name shall be Duke University and it shall not be operated for private gain, to be utilized by its Board of Trustees, in defraying its administration and operating expenses, increasing and improving its facilities and equipment, the erection and enlargement of buildings and the acquisition of additional acreage for it, adding to its endowment or in such other manner for it as the Board of Trustees of said institution may from time to time deem to be of its best interests, provided that in case such institutions shall incur any expense of liability beyond provisions already in sight to meet same, or in the judgment of the Trustees under this Indenture be not operated in a manner calculated to achieve the results intended hereby the Trustees under this Indenture may withhold the whole or any part of such percentage from said institution so long as such character of expense or liabilities or operation shall continue, such amounts so withheld to be in whole or in part either accumulated and applied to the purposes of such University in any future year or years, or utilized for the other objects of this Indenture, or added to the corpus of this trust for the purpose of increasing the principal of the trust estate, as the Trustees may determine.

III. (In Article SEVENTH) I have selected Duke University as one of the principal objects of this trust because I recognize that education, when conducted along sane and practical, as opposed to dogmatic and theoretical, lines, is, next to religion, the greatest civilizing influence. I request that this institution secure for its officers, trustees, and faculty, men of such outstanding character, ability, and vision as will insure its attaining and maintaining a place of real leadership in the educational

world, and that great care and discrimination be exercised in admitting as students only those whose previous records show a character, determination, and application evincing a wholesome and real ambition for life. And I advise that the courses at this institution be arranged, first, with special reference to the training of preachers, teachers, lawyers and physicians, because these are most in the public eye, and by precept and example can do most to uplift mankind, and second, to instruction in chemistry, economics, and history, especially the lives of the great of earth, because I believe that such subjects will most help to develop our resources, increase our wisdom and promote human happiness.

IV. (In Article THIRD) as respects any year or years and any purpose or purposes for which this trust is created (except the payments hereinafter directed to be made to Duke University) the Trustees in their uncontrolled discretion may withhold the whole or any part of said incomes, revenues and profits which would otherwise be distributed under the "Fifth" division hereof, and either (1) accumulate the whole or any part of the amount so withheld for expenditures (which the Trustees are hereby authorized to make thereof) for the same purpose in any future year or years, or (2) add the whole or any part of the amounts so withheld to the corpus or the trust, or (3) pay, apply and distribute the whole or any part of said amounts to and for the benefit of any one or more of the other purposes of this trust, or (4) pay, apply and distribute the whole or any part of said amounts to or for the benefit of any such like charitable, religious or educational purpose within the State of North Carolina or the State of South Carolina, or any such like charitable hospital purpose which shall be selected therefor by Trustees called for the purpose, complete authority and discretion in and for such selection and utilization being hereby given the Trustees in the premises.

2. *The Charter of the University*

Section 1. That A. P. Tyer, J. H. Southgate, B. N. Duke, G. A. Oglesby, V. Ballard, J. A. Long, J. F. Burton, J. N. Cole, F. A. Bishop, J. G. Brown, C. W. Toms, J. W. Alspaugh, W. R. Odell, J. A. Gray, F. Stikeleather, Kope Elias, S. B. Turrentine, P. H. Hanes, T. F. Marr, G. W. Flowers, M. A. Smith, R. H. Parker, W. J. Montgomery, F. M. Simmons, O. W. Carr, R. A. Mayer, N. M. Jurney, Dred Peacock, B. B. Nicholson, W. G. Bradsher, E. T. White, T. N. Ivey, J. B. Hurley, R. L. Durham, W. C. Wilson, and their associates and successors shall be, and continue as they have been, a body politic and corporate under the name and style of DUKE UNIVERSITY, and under such name and style shall have perpetual existence and are hereby invested with all the property and rights of property which now belong to the said corporation, and said corporation shall henceforth and perpetually, by the name and style of

DUKE UNIVERSITY, hold and use all the authority, privileges, and possessions it had or exercised under any former title and name, and be subject to all recognized legal liabilities and obligations now outstanding against such corporations.

Section 2. That such corporation is authorized to receive and hold by gift, device, purchase or otherwise, property, real and personal, to be held for the use of said University and its dependent schools or for the use of either or both (as may be designated in the conveyance or will).

Section 3. That the Trustees shall be thirty-six in number of whom twelve shall be elected by the North Carolina Conference of the M. E. Church, South; twelve by the W. N. C. Conference of the said church; and twelve by the graduates of said University; *Provided*, however, That no person shall be elected a Trustee till he has first been recommended by a majority of the Trustees present at a regular meeting; and the Trustees shall have power to remove any member of their body who may remove beyond the boundary of the State or who may refuse or neglect to discharge the duties of a Trustee. The term of office of Trustees shall be six years, and they shall be so arranged that four Trustees shall be elected by each Conference and four by the graduates every two years. The Trustees shall regulate by bylaws the manner of election of Trustees to be chosen by the graduates. Should there exist a vacancy by death, resignation, or otherwise of any Trustee, the same shall be filled for the unexpired term by the Board of Trustees. That the present Trustees shall continue and remain in office during the term for which they have been heretofore respectively elected.

Section 4. That the said corporation shall be under the supervision, management and government of a president and such other persons as said Trustees may appoint; the said president, with the advice of other persons so appointed, shall from time to time make all needful rules and regulations for the internal government of said University and prescribe the preliminary examinations and terms and conditions on which pupils shall be received and instructed.

Section 5. That said Trustees shall have power to make such rules, regulations, bylaws not inconsistent with the Constitution of the United States and of this State, as may be necessary for the good government of said University and management of the property and funds of the same.

Section 6. That the Trustees shall have power to fix the time of holding their annual and other meetings, to elect a president and professors for said University, to appoint an executive committee to consist of not less than seven members, which committee shall control the internal regulations of said University and fix all salaries and emoluments, and to do all other things necessary for an institution of learning not inconsistent with the laws of this State and of the United States.

Section 7. That the Faculty and Trustees shall have the power of

conferring such degrees and marks of honor as are conferred by colleges and universities generally; and that five Trustees shall be a quorum to transact business.

Section 8. That all laws and parts of laws or of the charter heretofore granted which are in conflict with this act are hereby repealed.

Section 9. That this act shall be in force from and after its ratification and acceptance by the Board of Trustees.

3. *The Bylaws of the University*

Article I. Aims

1. The aims of Duke University are to assert a faith in the eternal union of knowledge and religion set forth in the teachings and character of Jesus Christ, the Son of God; to advance learning in all lines of truth; to defend scholarship against all false notions and ideals; to develop a Christian love of freedom and truth; to promote a sincere spirit of tolerance; to discourage all partisan and sectarian strife; and to render the largest permanent service to the individual, the state, the nation, and the church. Unto these ends shall the affairs of this University always be administered.

Article II. Board of Trustees

1. ***Powers.*** All powers of the University shall be vested in a Board of Trustees consisting of thirty-six members.

2. ***Nomination and Elections.*** The Trustees shall be elected as follows, twelve by the North Carolina Conference of the Methodist Church; twelve by the Western North Carolina Conference of the Methodist Church; and twelve by the graduates of Duke University.

The Executive Committee, acting as a committee on nominations, shall report to the Board the names of the persons whom it nominates for election as Trustees. The Board, by majority vote of the Trustees present at a regular meeting, shall recommend the persons to be elected Trustees and submit its recommendations to the appropriate Conference of the Methodist Church and the graduates.

No person who shall have attained the age of seventy years shall be elected a Trustee.

3. ***Term.*** The term of office of a Trustee shall be six years, beginning on the first day of January following the election, and the terms shall be so arranged that four Trustees shall be elected by each Conference and four by the graduates every two years.

4. ***Vacancies.*** Any vacancy in the membership of the Board of Trustees

shall be filled for the unexpired term by a majority vote of the Trustees present at a regular meeting of the Board.

5. ***Retirement.*** A Trustee who attains or has attained the age of seventy years shall retire at the end of the term for which he has been elected.

6. ***Emeritus.*** The Board of Trustees may elect a retiring or resigning Trustee a Trustee Emeritus. Trustees Emeriti shall be entitled to receive notice of all meetings of the Board and attend and participate in such meetings, but shall not have the right to vote.

7. ***Removal.*** Any Trustee who may refuse or neglect to discharge the duties of Trustee may be removed by the affirmative vote of three-fourths of the members of the entire Board of Trustees.

Article III. Meetings of the Board

1. ***Annual Meeting.*** The annual meeting of the Board of Trustees shall be held on the Saturday before the first Monday in June.

2. ***Regular Meetings.*** Regular meetings of the Board of Trustees shall be held on the Saturday preceding the day on which Founders' Day is celebrated and on the first Friday in March.

3. ***Special Meetings.*** Special meetings shall be held upon the call of the Chairman, or upon written request of twelve or more Trustees addressed to the Secretary, with a copy to the Chairman specifying the business to be transacted at the meeting.

4. ***Notice.*** The Secretary shall give at least five days' notice to each member of the Board stating the time and place of all meetings, and the purpose of any special meeting.

5. ***Place.*** All meetings of the Board of Trustees shall be held at Duke University in the City of Durham, North Carolina, except that the Trustees by vote, or written assent, of a majority of the then members of the Board may designate another place for any meeting.

6. ***Quorum.*** A majority of the then members of the Board of Trustees shall be a quorum for the transaction of business.

Article IV. Officers of the Board

1. ***Officers of the Board.*** The officers of the Board of Trustees shall be a Chairman, a Vice Chairman, and a Secretary.

2. ***Election.*** The officers of the Board of Trustees shall be elected at its annual meeting for a term of one year or until their successors are elected and qualified.

3. ***Duties.***

   a. The Chairman shall preside at all meetings of the Board, shall represent the Trustees at public meetings of the University, and shall be a member of and Chairman of the Executive Committee.

   b. The Vice Chairman shall perform the duties of the Chairman in

the absence or disability of the Chairman, or in the event of a vacancy in that office.

c. The Secretary of the University shall also be the Secretary of the Board of Trustees. He shall record the minutes of all meetings of the Board and its Executive Committee, and shall have custody of the Charter, Bylaws, minutes, records and other documents of the Board and its Committees. The Secretary shall send a copy of the minutes to each member of the Board promptly after each meeting of the Board and of the Executive Committee.

4. ***Vacancies.*** A vacancy in any office of the Board of Trustees may be filled for the unexpired term by the Board of Trustees.

Article V. Committees of the Board

1. ***Committees.*** The Standing Committees of the Board shall be:

1. Executive Committee
2. Building and Grounds Committee
3. Committee for Institutional Advancement
4. University Committee.

The Board of Trustees may authorize other committees from time to time.

The Committees of the Board of Trustees shall have the powers and duties set forth in these Bylaws and such other powers and duties as the Board may delegate to them. They shall exercise their powers and perform their duties subject to the direction and approval of the Board. They may from time to time make recommendations to the Board for the establishment of new policies or any changes in existing policies.

2. ***Membership.*** At each annual meeting the Board of Trustees shall elect the members of the four Standing Committees to serve for the ensuing year. The Chairman of the Board of Trustees and the President of the University shall be members of the Executive Committee and shall be ex officio, non-voting members of all other Committees of the Board of Trustees.

Insofar as practical membership on the Standing Committees should be rotated.

3. ***Vacancies.*** Any vacancy in the membership of a Standing Committee shall be filled by the Chairman of the Board of Trustees.

4. ***Meetings.*** Each Standing Committee shall meet at such times and places and upon such notice as it may determine, and shall file a copy of the minutes of each meeting with the Secretary of the University.

5. ***Quorum.*** A majority of the then members of a Standing Committee shall be a quorum for the transaction of business.

Article VI. Executive Committee

1. ***Membership.*** The Chairman of the Board, the President of the University, and not less than five Trustees shall constitute the Executive Committee of this Board.*

2. ***Powers and Duties.*** The Executive Committee shall:

a. Control the internal regulations of the University.
b. Fix all salaries, emoluments, and other allowances.
c. Approve annual budget and authorize the annual audit.
d. Appoint an Investment Committee of not less than five members, at least two of whom shall be Trustees, with such powers and duties as may be assigned to it by the Executive Committee.
e. Subject to the provisions of the Charter and these Bylaws, exercise all powers of the Board of Trustees in the interims between meetings of the Board.
f. Report its actions to the Board of Trustees.
g. Act as the Nominating Committee for the election of Trustees.
h. Appoint a Budget and Audit Committee, composed of not less than three (3) members, at least two (2) of whom shall be Trustees, and the Vice President for Business and Finance, ex officio, with such powers and duties as may be assigned to it by the Executive Committee.

Article VII. Building and Grounds Committee

1. ***Membership.*** The Building and Grounds Committee shall be composed of not less than five Trustees and the Vice President for Business and Finance ex officio.

2. ***Powers and Duties.*** The Building and Grounds Committee shall consider proposals by the President for:

a. Plans for the development and use of the University's buildings, grounds, and utilities devoted to educational purposes.
b. The kind, location and plans for all buildings, utilities and improvements, including roads and parking areas.
c. Architects and contractors.

The Committee shall have authority to accept all new construction on behalf of the University but shall not incur any expenses not previously authorized by the Board of Trustees or the Executive Committee.

The Committee shall report its findings and recommendations to the Board of Trustees or the Executive Committee.

Article VIII. Committee for Institutional Advancement

1. ***Membership.*** The Committee for Institutional Advancement shall

*The Chancellor, the Provost, and the Vice President for Business and Finance have been made interim members until a new President of the University is elected.

be composed of not less than five Trustees and the Vice President for Institutional Advancement ex officio.

2. *Powers and Duties.* The Committee for Institutional Advancement shall consider proposals by the President for policies and plans concerning the financial development, fund raising, public relations, and alumni affairs of the University.

The Committee shall report its findings and recommendations to the Board of Trustees or the Executive Committee.

Article IX. University Committee

1. *Membership.* The University Committee shall be composed of not less than twelve Trustees and the Provost ex officio.

2. *Powers and Duties.* The University Committee shall:

a. Serve as a Board of Visitors to the University.
b. Serve as a Committee on Earned Degrees.
c. Consider proposals by the President for the educational role of each school, college, and unit of the University and for the University as a whole, the admission of students at all levels, student life and activities, educational and research programs, and the coordination of all educational activities.
d. Designate five trustees who, along with an equal number of faculty members designated by the President, and the President ex officio, shall serve as a Committee on Honorary Degrees to make recommendations to the University Faculty and the Board of Trustees.

The Committee shall report its findings and recommendations to the Board of Trustees or the Executive Committee.

Article X. Officers of the University

1. The Officers of the University shall be a President, a Chancellor, a Provost, a Vice President for Business and Finance, a Vice President for Institutional Advancement, one or more other Vice Presidents, a Treasurer, a Secretary, a University Counsel, and such other officers as the Board of Trustees may elect. One person may hold more than one office, except that the offices of President and Secretary may not be held by the same person.

2. These Officers shall be elected by the Board of Trustees at its annual meeting for a term of one year and shall serve until their successors are elected and have taken office.

3. A vacancy in any office of the University may be filled, for the unexpired term, by the Board of Trustees or by the Executive Committee.

Article XI. President

1. The President shall be the chief educational and administrative officer of the University. He shall be responsible to the Board of Trustees for the supervision, management, and government of the University, and for interpreting and carrying out the policies of the Board of Trustees. He shall have the powers and duties set forth in the Charter and in these Bylaws, and such other powers and duties as the Board of Trustees shall delegate to him.

2. He, or someone designated by him, shall preside at all academic functions and represent the University before the public.

3. He shall preside at all meetings of the University Faculty. He may veto any action taken by the University Faculty or any action taken by the faculty of any college or school in the University and state his reasons for such action.

4. He shall submit a proposed annual budget for the University to the Executive Committee prior to the beginning of the fiscal year covered by the budget.

5. He shall submit to the Board of Trustees an annual report on the condition, operations and needs of the University.

6. He shall recommend to the Board of Trustees persons to be officers of the University other than the President.

Article XII. Provost

1. The Provost shall be an executive officer of the University, under the President, responsible for all educational affairs and activities, including research, and for all aspects of student activity and welfare. He shall have the powers and duties assigned to him by the President and shall report to the President.

2. He shall be a member of the faculty of each college and school, and ex officio a member of each committee (other than Committees of the Board of Trustees) or other body concerned with matters for which he is responsible.

3. He shall receive recommendations developed by the faculty and educational officers for consideration and recommendation to the President.

4. He shall assume the powers and duties of the President during the incapacity or absence of the President or in case of a vacancy in that office.

Article XIII. Vice President for Business and Finance

1. The Vice President for Business and Finance shall be an executive officer, under the President, responsible for all business and finance, in-

cluding accounting and auditing, preparation of budgets, fiscal planning, and operating of services of the University. He shall have the power and duties assigned to him by the President and shall report to the President.

2. He shall have custody of all records, contracts, agreements, deeds, and other documents of the University or relating to its operations or properties, except minutes of meetings.

3. He shall submit to each regular meeting of the Executive Committee a report on those aspects of the finances of the University that the Executive Committee may require, and shall submit to the Board of Trustees at the end of each fiscal year an account of all receipts and disbursements for the preceding year and a statement in such detail as the Board of Trustees may require of the financial condition of the University at the end of such year.

4. He and the personnel under him shall be bonded to the extent determined by the Executive Committee.

Article XIV. Vice President for Institutional Advancement

The Vice President for Institutional Advancement shall be an executive officer, under the President, responsible for all public and alumni relations, fund raising, and long range planning and development. He shall have the powers and duties assigned to him by the President and shall report to the President.

Article XV. Treasurer

1. The Treasurer shall report to the President or such officer of the University as the President may direct and shall have the powers and duties assigned to him by the President or such other officer.

2. He may receive and disburse investment funds and purchase, sell, or otherwise dispose of investment securities pursuant to the directions of the Executive Committee or Investment Committee, as the case may be.

3. He and the personnel under him shall be bonded to the extent determined by the Executive Committee.

Article XVI. Secretary

1. The Secretary, under the President, shall have all of the powers and duties set forth in these Bylaws and the powers and duties commonly incident to his office. He also shall have the powers and duties assigned to him by the President and shall report to the President.

2. He shall be the custodian of the seal of the corporation and shall affix and attest to same on all duly authorized contracts, deeds, and other documents.

3. He shall maintain an official roster setting forth the status of all persons employed by the University.

Article XVII. University Counsel

The University Counsel shall be the legal advisor to the University and shall be responsible for all matters of a legal nature concerning the University, including litigation, preparation or approval of all contracts, deeds, conveyances, or other documents.

Article XVIII. Faculty

1. The University Faculty shall be composed of the President, the Provost, the Vice Presidents, the Secretary (who shall also be the Secretary of the Faculty), all deans, professors, associate professors, and assistant professors, Registrar, and the University Librarian, and such other persons as may be designated by the President and approved by the Executive Committee or the Board of Trustees.

2. The University Faculty shall be responsible for the conduct of instruction and research in the various colleges and schools in the University. It may also consider and make recommendations to the President regarding any and all phases of education at the University.

3. The University Faculty shall approve and recommend to the Board of Trustees the persons it deems fit to receive degrees or other marks of distinction, and the establishment of any new degree or diploma.

4. The University Faculty may organize and exercise its functions through appropriate councils, committees, or other bodies.

5. Each college and school in the University may have a faculty of its own, which shall be composed of the President, the Provost, the Secretary, and all members of the University Faculty in the particular college or school. Each such faculty shall function under the President and other officers of educational administration and subject to the regulations of the University Faculty.

Article XIX. Appointments, Promotions and Tenure

1. Members of the University Faculty shall be elected, appointed, or promoted by the Board of Trustees or the Executive Committee upon the recommendation of the Provost, with the approval of the President.

2. Members of the University Faculty, above the rank of instructors, shall have tenure after seven years of continuous service at the University, or such shorter period as may be determined for individual cases, by the Board of Trustees or the Executive Committee; provided that any such person shall be subject to dismissal by the Board of Trustees or the Executive Committee for misconduct or neglect of duty.

Article XX. Sabbatical Leaves

1. Each member of the University Faculty of the rank of professor, associate professor, or assistant professor shall be eligible for sabbatical leave after each six years of service to the University. Such leave may be taken for a full year at half salary or a half year at full salary.

2. Sabbatical leave may be granted by the Executive Committee upon the written recommendation of the dean of the appropriate college or school, approved by the Provost and the President.

Article XXI. Retirement

1. All members of the faculty of the University who are eligible for or participate in the TIAA Plan and who would attain the age of seventy years prior to March 1 of a given academic year shall retire at the end of the preceding academic year and all such members of the faculty who attain the age of seventy years on or after March 1 in a given academic year shall retire at the end of such academic year.

2. The retirement and annuity plan adopted by the University on October 1, 1925, is hereby amended in those respects required to conform with the provisions of the Bylaws.

Article XXII. Fiscal Year, Academic Year and Academic Calendar

1. The fiscal year of the University shall commence on July 1 and end on the following June 30.

2. The academic year of the University shall commence on September 1 and end on the following August 31.

3. The President shall establish the academic calendar for each academic year, except that graduation exercises shall take place on the first Monday in June of each year.

Article XXIII. Amendment of Bylaws

These Bylaws may be amended at any regular meeting of the Board of Trustees by the affirmative vote of two-thirds of the then membership of the Board, provided that the proposed amendment is mailed by the secretary of the Board to each member at least twenty days before the meeting.

Alumni Organizations

All former students of Duke University are enrolled as members of the General Alumni Association. This organization meets annually, in June, to transact appropriate business and to hear a report on the state of the University from the President of the University or his representative. At this time, too, the Association elects its officers and alumni representatives to the Athletic Council. Alumni also elect four representatives to the University Board of Trustees in alternate years by mail ballot.

In addition to the General Alumni Association, there are individual associations for seven of the University's nine schools and colleges. These include, at the undergraduate level, The Woman's College, the School of Nursing, and the School of Engineering, and at the graduate and professional level, the Schools of Medicine, Forestry, Law, and Divinity. Each of these associations meets at least once each year to transact pertinent business and to elect officers.

Each class that has been graduated from the University also exists as a permanent organization, and its members will customarily reunite at intervals of five years. In approximately 100 locations, where Duke alumni live in concentrated numbers, there are local alumni associations with purposes compatible to those of the General Alumni Association.

The executive body of the larger organization of alumni is the Duke University National Council, which also has representation from each of the University's faculties, from its administration and trustees, and from groups of special friends. The National Council meets twice each year, on Founders' Day and at Commencement, to establish and review the programs and policies that govern the activities of all alumni organizations and their relationships with the University.

The Department of Alumni Affairs is maintained by the University to implement, coordinate, and administratively assist in the execution of programs of alumni and alumni related activity. The Department also maintains alumni records and mailing lists and issues periodic publications designed to keep alumni and friends informed about organizational and University developments.

The Loyalty Fund program of annual giving and the Bequest Program, conducted under the auspices of the National Council, are also administered by the Department of Alumni Affairs.

The purposes of all Duke University alumni organizations can best be indicated by quoting Article II of the constitution of the General Alumni Association: "The objects of this association shall be to promote the welfare and progress of Duke University, to maintain and cultivate good fellowship among its members, and to exercise the functions created for alumni . . . in the Charter of the University."

Gifts and Bequests

Duke University is a privately established institution which derives its principal support from endowment funds and from gifts and grants, thus enabling it to offer both academic and professional training to its students at a fraction of the actual cost. Gifts and grants for both operational and capital development purposes presently account for approximately one-half of the University's annual income. They are essential to the quality of its educational services and to its progress as a center of learning and research.

Gifts to Duke University, of course, fully qualify as tax deductible contributions.

The University welcomes gifts, immediate or deferred, when made without restriction as to use or when designated for any of a broad variety of purposes. Gifts may be of cash, securities, or any kind of real or personal property, depending upon the wishes and the conveniences of the donor, and University officers are prepared to confer at any time to make sure that both the donor's wishes and possible tax advantages are fully realized.

A number of publications, designed to assist the donor in making a gift, are available, and requests for these or other information will be promptly acknowledged. Such requests should be addressed to the Office of the Vice President for Business and Finance, 211 Allen Building, Duke University, Duke Station, Durham, N.C.

Deferred gifts may be made through bequests or through insurance, as well as through a variety of trust arrangements. Such gifts may become significant factors in estate planning, and while qualified counseling is essential in most instances, some sample bequest forms may be noted:

General

I give (devise; if real property) and bequeath to Duke University, a corporation existing under the laws of the State of North Carolina

and located in the City and County of Durham, State of North Carolina, and its successors forever, the sum of ..... dollars (or otherwise describe the gift) for the general purposes and uses of the University at the discretion of the Board of Trustees.

Specific

I give (devise; if real property) and bequeath to Duke University, a corporation existing under the laws of the State of North Carolina and located in the City and County of Durham, State of North Carolina, or its successors forever, the sum of ..... dollars (or otherwise describe the gift) and direct that the income therefrom shall be used for the following purposes, viz. (here describe the use desired).

Codicil

Having hereinbefore made my last Will and Testament dated ....., and being of sound mind, I hereby make, publish, and declare the following codicil thereto; (here insert clause in same form as if it had been included in body of Will). Except as hereinbefore changed, I hereby ratify, confirm, and republish my said last Will and Testament.

Office of Information Services

The Office of Information Services is the official news agency of the University, and all University news, except sports, emanates from this office. The Office maintains the University's relationship with the press, radio and television, and other communications media, and interprets the University—its faculty, its research, and its academic achievements—to the public via these media.

The Office also maintains individual biographical files on all faculty members, students, and staff, as well as files on all University departments and activities. Its files of clippings form a rich source of historical information of the Institution's life. In addition, the Office is a source of information for the many inquiries about Duke University which are received daily from all sections of the nation and from abroad.

Directory of the Officers, Faculty, and Staff

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Officers, Faculty, and Staff of the University for the Year 1968-69

The Corporation

The University Trustees

(The date in parentheses indicates the year of election.)

Trustees whose terms expire December 31, 1971

George Venable Allen (1961), *Vice Chairman*	Washington, D. C.
Merrimon Cuninggim (1963)	St. Louis, Mo.
Benjamin Everett Jordan (1943)	Saxapahaw, N. C.
George Crews McGhee (1962)	Middleburg, Va.
Marshall I. Pickens (1963)	Charlotte, N. C.
Henry Gibbons Ruark (1962)	Elizabeth City, N. C.
Walter McGowan Upchurch, Jr. (1964)	New York, N. Y.
Charles Byrd Wade, Jr. (1964)	Winston-Salem, N. C.

From the Alumni

Kenneth Millikan Brim (1952)	Greensboro, N. C.
Miss Nancy Hanks (1966)	New York, N. Y.
Edgar Harrison Nease (1950)	Charlotte, N. C.
Clifford W. Perry (1966)	Winston-Salem, N. C.

Trustees whose terms expire December 31, 1973

Blanche B. Brian (1968)	Raleigh, N. C.
Walter E. Hoadley (1968)	San Francisco, Calif.
Alfred M. Hunt (1967)	Pittsburgh, Pa.
Ben Neely Miller, Jr. (1958)	Columbia, S. C.

William R. Pitts (1968)	Charlotte, N. C
Thomas Fuller Southgate, Jr. (1959)	Mt. Airy, N. C
Richard Elton Thigpen (1953)	Charlotte, N. C
K. Brantley Watson (1968)	Baltimore, Md
From the Alumni	
Julius Welch Harriss (1947)	High Point, N. C
Raymond D. Nasher (1968)	Dallas, Texa
Robert Henry Pinnix (1959)	Gastonia, N. C
Charles Sylvanus Rhyne (1961)	Washington, D. C

Trustees whose terms expire December 31, 1975

Thomas A. Finch (1963)	Thomasville, N. C
Amos Ragan Kearns (1945)	High Point, N. C
Thomas Lee Perkins (1958)	New York, N. Y
Henry Edward Rauch (1964)	Greensboro, N. C
Mary D. B. T. Semans (1961)	Durham, N. C
*Wright Tisdale (1957), *Chairman*	Dearborn, Mich
James Frederick Von Canon (1959)	Sanford, N. C
Wilson O. Weldon (1968)	Nashville, Tenn
From the Alumni	
P. Huber Hanes, Jr. (1954)	Winston-Salem, N. C
Paul Hardin, III (1969)	Spartanburg, S. C
Edwin L. Jones, Jr. (1970)	Charlotte, N. C
Charles S. Murphy (1970)	Annapolis, Md

Trustees Emeriti

Sidney Sherrill Alderman (1934)	Franc
Thomas A. Aldridge (1959)	Naples, Fl
Charles Albert Cannon (1949)	Concord, N. C
Norman Atwater Cocke (1947)	Charlotte, N. C
Benjamin Ferguson Few (1941)	Southport, Con
Joshua Lawrence Horne (1934)	Rocky Mount, N. C
Calvin Bryan Houck (1951)	Roanoke, V
Edwin Lee Jones (1945)	Charlotte, N. C
Robert Andrew Mayer (1897)	Charlotte, N. C
Frank Odell Sherrill (1959)	Charlotte, N. C
James Raymond Smith (1934)	Mt. Airy, N. C
Estelle Flowers Spears (1951)	Durham, N. C
Kenneth Crawford Towe (1954)	Greenwich, Con
George Roberts Wallace (1954)	Morehead City, N. C
Bunyan Snipes Womble (1915)	Winston-Salem, N. C

Committees of the University Trustees

Executive Committee

‡Wright Tisdale, *Chairman*	Dearborn, Mich
George V. Allen, *Vice Chairman*	Washington, D. C
†Marcus E. Hobbs	Durham, N. C
†Charles B. Huestis	Durham, N. C
Amos R. Kearns	High Point, N. C
Thomas L. Perkins	New York, N. Y
Clifford W. Perry	Winston-Salem, N. C

*Chairman through 12-7-68; Charles B. Wade, Jr. elected Chairman.
†To serve until a President is elected.
‡Through 12-7-68; Charles B. Wade

Henry E. Rauch	Greensboro, N. C.
Richard Elton Thigpen	Charlotte, N. C.
Walter McGowan Upchurch, Jr.	New York, N. Y.
Fred Von Canon	Sanford, N. C.
Charles Byrd Wade, Jr.	Winston-Salem, N. C.
°Barnes Woodhall	Durham, N. C.

Building and Grounds Committee

Fred Von Canon, *Chairman*	Sanford, N. C.
†Norman E. Edgerton	Raleigh, N. C.
Pleasant Huber Hanes, Jr.	Winston-Salem, N. C.
J. Welch Harriss	High Point, N. C.
Marshall I. Pickens	Charlotte, N. C.
Robert H. Pinnix	Gastonia, N. C.
Mary D. B. T. Semans	Durham, N. C.
Vice President Charles B. Huestis, *ex officio*	

Committee for Institutional Advancement

George V. Allen, *Chairman*	Washington, D. C.
Thomas A. Finch, Jr.	Thomasville, N. C.
W. Kenneth Goodson	Birmingham, Ala.
Alfred M. Hunt	Pittsburgh, Pa.
Clifford W. Perry	Winston-Salem, N. C.
Marshall I. Pickens	Charlotte, N. C.
Charles S. Rhyne	Washington, D. C.
Thomas F. Southgate, Jr.	Mt. Airy, N. C.
Wright Tisdale	Dearborn, Mich.
Charles Wade, Jr.	Winston-Salem, N. C.
C. Brantley Watson	Baltimore, Md.
Vice President Frank L. Ashmore, *ex officio*	

University Committee

Walter McGowan Upchurch, Jr., *Chairman*	New York, N. Y.
Mary D. B. T. Semans, *Vice Chairman*	Durham, N. C.
Blanche B. Brian	Raleigh, N. C.
Kenneth M. Brim	Greensboro, N. C.
Merrimon Cuninggim	St. Louis, Mo.
Miss Nancy Hanks	New York, N. Y.
Walter E. Hoadley	San Francisco, Calif.
J. Everett Jordan	Saxapahaw, N. C.
George Crews McGhee	Middleburg, Va.
Ben Neely Miller	Columbia, S. C.
Edgar H. Nease	Winston-Salem, N. C.
William R. Pitts	Charlotte, N. C.
Henry G. Ruark	Elizabeth City, N. C.

‡Provost R. Taylor Cole, *ex officio.*

General Administration

Douglas M. Knight, Ph.D., Litt.D., L.L.D., L.H.D.	University House
President	1508 Pinecrest Road

°To serve until a President is elected.
†Through 12-31-69.
‡Through 1-15-69; Marcus E. Hobbs, *ex officio.*
§Through 6-30-69.

†Barnes Woodhall, M.D.	
Chancellor pro tem	4006 Dover Roa
‡Marcus E. Hobbs, Ph.D.	
Provost	115 Pinecrest Roa
Charles B. Huestis	
Vice President for Business and Finance	47 A & B Colonial Apt
§William G. Anylan, M.D.	
Vice President for Health Affairs	1516 Pinecrest Roa
Frank Leon Ashmore, A.B.	
Vice President for Institutional Advancement	2637 McDowell Stre
Gerhard Chester Henricksen, M.A., C.P.A.	
Vice President and Treasurer	3629 Westover Roa
Everett Harold Hopkins, M.A., L.L.D.	
Vice President for Regional Programs	2016 Campus Driv
‖Frank T. de Vyver, Ph.D.	
Vice Provost	8 Sylvan Roa
Harold W. Lewis, Ph.D.	
Vice Provost and Dean of the Faculty	1708 Woodburn Roa
**John C. McKinney, Ph.D.	
Vice Provost and Dean of the Graduate School	1627 Marion Aven
††James L. Price, Ph.D.	
Vice Provost and Dean of Undergraduate Education	2723 Circle Driv
Craufurd D. Goodwin, Ph.D.	
Vice Provost and Director of International Programs	2256 Cranford Roa
Benjamin Edward Powell, Ph.D.	
Librarian	3609 Hathaway Roa
‡‡Clark R. Cahow, Ph.D.	
University Registrar	1106 Watts Stre
Rufus H. Powell, L.L.B.	
Secretary of the University	719 Cornwallis Roa
Stephen Cannada Harward, A.B., C.P.A.	
Assistant Secretary and Controller	2502 Sevier Stre
Edwin Constant Bryson, L.L.B.	
University Counsel	818 Anderson Stre

Emeriti

Donald Keith Adams, Ph.D.	
Professor Emeritus of Psychology	1214 West Cornwallis Roa
Edwin Pascal Alyea, M.D.	
Professor Emeritus of Urology	3102 Devon Roa
William Banks Anderson, M.D.	
Professor Emeritus of Ophthalmology	502 East Forest Hills Boulevar
Thomas Malcolm Aycock, M.A.	University Apartmen
Professor Emeritus of Physical Education	Apartment D

†Associate Provost thru 1-15-69; Barnes Woodhall appointed Special Assista to the President until 3-7-69 when elected Chancellor pro tem.

‡R. Taylor Cole, Ph.D., Provost through 1-15-69.

§Associate Provost 1-15-69 through 6-30-69; elected Vice President for Heal Affairs 5-31-69.

‖Retired from Administration 7-31-69.

**Richard L. Predmore, D.M.L., retired from Administration 7-31-69.

††Dean of Trinity College through 6-30-69.

‡‡Richard L. Tuthill, Ed.D., retired from Administration 9-1-69.

Catharine May Banham, Ph.D.
Associate Professor Emeritus of Psychology — 300 Swift Avenue

Edward Willard Berry, Ph.D.
Professor Emeritus of Geology — 654 McClendon, Corpus Christi, Tex.

Lucius Aurelius Bigelow, Ph.D.
Professor Emeritus of Chemistry — 131 Pinecrest Road

Harold Crusius Bird, Ph.B., C.E. — 2621 Hampton Avenue
Professor Emeritus of Civil Engineering — Charlotte, N. C.

William Bryan Bolich, B.C.L. — 1811 Brightwaters Blvd.
Professor Emeritus of Law — St. Petersburg, Fla.

Edward Claude Bolmeier, Ph.D.
Professor Emeritus of Education — 1535 Pinecrest Road

John Saeger Bradway, A.M., LL.B. — 2803 Carleton
Professor Emeritus of Law — San Diego, Calif.

Alfred Smith Brower, A.B.
Business Manager and Treasurer Emeritus — 2543 Sevier Street

‡ Harned Bufkin, R.N., R.R.L.
Associate Professor Emeritus of Medical Record Library Science — Village of Picardy, Crystal River, Fla.

Francis Bayard Carter, M.D.
Professor Emeritus of Obstetrics and Gynecology — 5 Sylvan Road

Juan R. Castellano, Ph.D. — University of Miami
Professor Emeritus of Romance Languages — Coral Gables, Fla.

Benjamin Guy Childs, M.A.
Professor Emeritus of Education — 1019 West Markham Avenue

Kenneth Willis Clark, B.D., Ph.D.
Professor Emeritus of New Testament — 1308 West Markham Avenue

James T. Cleland, Th.D.
James B. Duke Professor Emeritus of Preaching — 2117 Campus Drive

Frederick Augustus Grant Cowper, Ph.D.
Professor Emeritus of Romance Languages — 1017 Dacian Avenue

Jason Crum, Ph.D., Litt.D. — 1538 Shenandoah St.
Professor Emeritus of Biblical Literature — Hollywood, Fla.

Wilburt Cornell Davison, M.D., D.Sc., LL.D.
James B. Duke Professor Emeritus of Pediatrics and Dean Emeritus of the School of Medicine — Box 34, Roaring Gap, N. C.

Charles Aubrey Dukes, A.B.
Assistant Vice President Emeritus — 1309 Oakland Avenue

George Sharp Eadie, M.B., Ph.D.
Professor Emeritus of Physiology and Pharmacology — 3433 Dover Road

Watt Weems Eagle, M.D. — 703 Professional Drive
Professor Emeritus of Otolaryngology — New Bern, N. C.

Howard Easley, Ph.D.
Associate Professor Emeritus of Education — 10 Lebanon Circle

Frank Nicholas Egerton, A.M., E.E. — Brevard College
Associate Professor Emeritus of Electrical Engineering — Brevard, N. C.

William Whitfield Elliott, Ph.D.
Professor Emeritus of Mathematics — 1740 Hillandale Road

Riley Davis Forbus, M.D.
Professor Emeritus of Pathology — 3309 Devon Road

°Deceased 9-19-68.
‡Deceased 5-10-68.

Clarence Ellsworth Gardner, Jr., M.D., D.Sci.	
Professor Emeritus of Surgery	Blue Creek, Astor, Fla
Allan H. Gilbert, Ph.D.	Apartment PH-J, 69 West 9th Stree
Professor Emeritus of English	New York, N. Y
Ellen Huckabee Gobbel, A.M.	
Dean Emeritus of Undergraduate Instruction	2410 Par Plac
Paul Magnus Gross, Ph.D.	
William Howell Pegram Professor	
Emeritus of Chemistry	3816 Dover Roa
Irving Emery Gray, Ph.D.	
Professor Emeritus of Zoology	124 Pinecrest Roa
Julia Rebecca Grout, M.S.	
Professor Emeritus of Physical Education	2320 Prince Stree
Howard N. Haines, B.S.	
Associate Professor Emeritus of Civil Engineering	3530 Randolph Stree
William Holland Hall, A.M., M.S.C.E.	
Dean Emeritus of the College of Engineering and	Johnson Apartmer
J. A. Jones Professor Emeritus of Engineering	304 Watts Stree
George T. Hargitt, Ph.D., Sc.D.	
Professor Emeritus of Zoology	811 Watts Stree
J. Deryl Hart, M.D.	
President Emeritus and	
Professor Emeritus of Surgery	2324 Duke University Roa
Charles Cleveland Hatley, Ph.D.	
Professor Emeritus of Physics	Mt. Pleasant, N. C
Caroline Elizabeth Helmick, M.D.	6028 Zenith Ave
Associate Emeritus of Preventive Medicine	Minneapolis, Minn
Duncan Charteris Hetherington, Ph.D., M.D.	
Professor Emeritus of Anatomy	K-3B University Apartmen
Arthur Owen Hickson, Ph.D.	
Professor Emeritus of Mathematics	Box 2727, West Durham Statio
Leslie Benjamin Hohman, M.D.	
Professor Emeritus of Psychiatry	1520 Hermitage Cou
Calvin Bryce Hoover, Ph.D., Litt.D.	
James B. Duke Professor Emeritus of Economics	1702 Duke University Roa
Jay Broadus Hubbell, Ph.D., Litt.D.	
Professor Emeritus of English	121 Pinecrest Roa
William Henry Irving, Ph.D.	
Professor Emeritus of English	510 Watts Stre
Howard Eikenberry Jensen, Ph.D.	Lenoir Homes Cottage #
Professor Emeritus of Sociology	Columbia, M
Archibald Currie Jordan, M.A.	
Assistant Professor Emeritus of English	147 Pinecrest Roa
Brady Rimbey Jordan, Ph.D.	
Professor Emeritus of Romance Languages	117 Pinecrest Roa
Charles E. Jordan, LL.B.	
Vice President Emeritus	2507 Wrightwood Avenu
Charles Earl Landon, Ph.D.	Box 29
Professor Emeritus of Economics	Buies Creek, N. C
William Thomas Laprade, Ph.D.	
Professor Emeritus of History	1108 Monmouth Avenu
Alan Krebs Manchester, Ph.D.	
Professor Emeritus of History	406 Swift Avenu
Hiram Earl Myers, S.T.M., D.D.	
Professor Emeritus of Biblical Literature	141 Pinecrest Roa

Ernest W. Nelson, Ph.D.	
Professor Emeritus of History	939 Lambeth Circle
Walter McKinley Nielsen, Ph.D.	
James B. Duke Professor Emeritus of Physics	139 Pinecrest Road
ames G. Osborne, B.S.	907 Magellan Drive
Professor Emeritus of Forest Biometry	Sarasota, Fla.
Karl Bachman Patterson, A.M.	
Assistant Professor Emeritus of Mathematics	1024 Monmouth Avenue
Robert Leet Patterson, Ph.D.	40 Glenwood Drive
Professor Emeritus of Philosophy	Bellehaven, Greenwich, Conn.
Mary Poteat, Ph.D.	
Assistant Professor Emeritus of English	Box 6305, College Station
Wally Reichenberg-Hackett, Ph.D.	
Professor Emeritus of Psychology	College Station
oseph B. Rhine, Ph.D.	Route 3
Director Emeritus of Parapsychology Laboratory	Hillsborough, N. C.
Mabel F. Rudisill, Ph.D.	
Associate Professor Emeritus of Education	2121 Woodrow Street
Walter James Seeley, M.S.	
Dean Emeritus of the College of Engineering and James B. Duke Professor Emeritus of Electrical Engineering	1005 Urban Avenue
ohn Herman Shields, A.M.	
Associate Professor Emeritus of Accounting	1315 Vickers Avenue
David Tillerson Smith, M.D.	
James B. Duke Professor Emeritus of Microbiology; Professor Emeritus of Community Health Sciences; and Associate Professor Emeritus of Medicine	3437 Dover Road
Hilrie Shelton Smith	
James B. Duke Professor Emeritus of American Religious Thought	2721 Dogwood Road
essie Whitted Spence, B.D.	
Assistant Professor Emeritus of Biblical Literature	Methodist Retirement Home
Hersey Everett Spence, B.D., D.D., Litt.D.	
Professor Emeritus of Religious Education	Methodist Retirement Home
rederick William Stocker, M.D.	
Professor Emeritus of Ophthalmology	1124 West Forest Hills Boulevard
V. A. Stumpf, Ph.D.	
Professor Emeritus of Education	127 Pinecrest Road
lement Vollmer, Ph.D.	
Professor Emeritus of German	1617 Pinecrest Road
Warren Chase Vosburgh, Ph.D.	
Professor Emeritus of Chemistry	Route 1, Bahama, N. C.
lbert E. Wackerman, M.F.	P.O. Box 63
Professor Emeritus of Forest Utilization	Blutton, S. C.
rley John Walton, B.S.L., D.D.	3650 Mayflower Place
Professor Emeritus of Church Administration	Nashville, Tenn.
oring Baker Walton, Ph.D.	
Professor Emeritus of Romance Languages	2235 Cranford Road
harles Eugene Ward, Ph.D.	
Professor Emeritus of English	2429 Perkins Road
arie Anne Updike White, A.M.	
Associate Professor Emeritus of English	107 Pinecrest Road
igenia Remlin Whitridge, Ph.D.	
Assistant Professor Emeritus of Sociology	1511 West Pettigrew Street

*Alban Gregory Widgery, M.A. *Professor Emeritus of Philosophy*	Val Vista, Middle Road Winchester, Va.
Ralph Sydney Wilbur, B.S. in M.E., M.E. *Professor Emeritus of Mechanical Engineering*	1018 Demerius Street
James Wesley Williams, M.S. *Professor Emeritus of Civil Engineering*	405 Carolina Circle
Frederick Eliphaz Wilson, A.M. *Associate Professor Emeritus of German*	1115 Iredell Street
Robert Renbert Wilson, Ph.D., LL.D. *James B. Duke Professor Emeritus of Political Science*	717 Anderson Street
Frederick Adolphus Wolf, Ph.D. *James B. Duke Professor Emeritus of Botany*	924 Urban Avenue

Instructional Staff

(The date in parentheses indicates the year of appointment.)

Wallace Dare Abbey (1968), D.D.S. (Ohio State University) *Associate in Orthodontics in Department of Surgery*	1400 Georgia Avenue
Frances Dorothy Acomb (1945), Ph.D. (Chicago) *Associate Professor of History*	1000 North Duke Street Apartment 2
Paul Wesley Aitken (1964), Th.M. (Duke) *Assistant Professor of Pastoral Care*	2909 Harriman Drive
John Richard Alden (1955), Ph.D. (Michigan) *James B. Duke Professor of History*	2736 Dogwood Road
Irving E. Alexander (1963), Ph.D. (Princeton) *Professor of Psychology and Professor of Medical Psychology in Department of Psychiatry*	1111 Watts Stree
Arthur Tilo Alt (1961-65; 1967), Ph.D. (Texas) *Assistant Professor of German*	66 A Colonial Apt
John Cooley Altrocchi (1957), Ph.D. (California) *Associate Professor of Psychology and Associate Professor of Medical Psychology in Department of Psychiatry*	1110 Woodburn Road
Marcelino Amaya (1966), M.D. (Nacional Automona de Mexico) *Associate in Psychiatry*	2928 Friendship Road
Dennis Bernard Amos (1962) M.D. (London) *James B. Duke Professor of Immunology and Experimental Surgery*	Route 3 Hillsborough, N. C
†Nicholas Anastasiow (1966), Ph.D. (Stanford) *Associate Professor of Education*	2948 Friendship Road
Carl L. Anderson (1955), Ph.D. (Pennsylvania) *Associate Professor of English*	Route 2, Box 36
Edward E. Anderson (1966), M.D. (Duke) *Assistant Professor of Urology*	1 Winthrop Court
Lewis Edward Anderson (1936), Ph.D. (Pennsylvania) *Professor of Botany*	2020 Sunset Avenue
Nels Anderson (1966), Ph.D. (Purdue) *Assistant Professor of Obstetrics and Gynecology and Assistant Professor of Physiology and Pharmacology*	Route Hillsborough, N. C

*Deceased 3-28-68.
†Through 8-31-68.

Roger F. Anderson (1950), Ph.D. (Minnesota)
Professor of Forest Entomology — 2528 Perkins Road

William B. Anderson (1965), M.D. (Minnesota)
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Thomas E. Andreoli (1965), M.D. (Georgetown)
Assistant Professor of Medicine and
Assistant Professor of Physiology — 3021 Alabama Avenue Extension

William G. Anlyan (1952), M.D. (Yale)
Professor of Surgery — 1516 Pinecrest Road

Stanley H. Appel (1964-65; 1967), M.D. (Columbia)
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Mahadeo L. Apte (1965), Ph.D. (Wisconsin)
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Kiro Pete Arges (1953), M.S. (Tennessee)
Assistant Professor of Civil Engineering — 802 West Maynard Avenue

Clara Franzini-Armstrong (1968), Ph.D. (Pisa)
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Clay M. Armstrong (1966), M.D. (Washington)
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Assistant Professor of Neurology — 2914 Friendship Drive

John Leslie Artley (1955), D.Eng. (Johns Hopkins)
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Temporary Instructor in Zoology — Hillsborough Road

Patricia Avant (1968), M.S.N. (North Carolina) — 193 Daniels Road
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Lenox Dial Baker (1937), M.D. (Duke)
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Joseph Willis Beard (1937), M.D. (Vanderbilt)
James B. Duke Professor of Surgery in Charge of
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°Thomas O. Beidelman (1965), D.Phil. (Oxon.)
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Frederick Bernheim (1930), Ph.D. (Cantab.)
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°Through 8-31-68.
†Through 8-31-68.
‡Through 6-30-68.

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Justus Bier (Spring semesters since 1964), Ph.D. (Zurich) — 201 Pear Tree Lane
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James Bonk (1959), Ph.D. (Ohio State)
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Cazlyn Green Bookhout (1935), Ph.D. (Duke)
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Howard R. Boozer (1968), Ph.D. (Washington Univ.) — 4005 Picardy Drive
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Jack Botwinick (1963), Ph.D. (New York)
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Ruth M. Bowers (1967), M.A. (Chicago)
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William Boyle (1967), Ph.D. (Glasgow)
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Melvin O. Braaten (1965), Ph.D. (North Carolina State)
Assistant Professor of Forest Biometry and Lecturer in Mathematics — 3111 Sherbon Driv
William Dalton Bradford (1966), M.D. (Western Reserve)
Assistant Professor of Pathology and Associate in Pediatrics — 3724 Hope Valley Roa
David Gilbert Bradley (1949), Ph.D. (Yale)
Associate Professor of Religion — 2507 Sevier Stre
Charles Kilgo Bradsher (1939), Ph.D. (Harvard)
James B. Duke Professor of Chemistry — 118 Pinecrest Roa
Ralph J. D. Braibanti (1953), Ph.D. (Syracuse)
James B. Duke Professor of Political Science — 2614 Stuart Driv
Karl R. Braithwaite (1967), Ph.D. (Wisconsin)
Assistant Professor of Political Science — 2303 Lednum St., Apt. C-
Ralph Brauer (1966), Ph.D. (Rochester)
Professor of Physiology and Pharmacology and Chief of Laboratory of Marine Physiology — 7205 Wrightsville Aven Wilmington, N.
Patrick J. Breen (1967), M.D. (Royal College of Surgeons, Dublin)
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Elizabeth Bregg (1968), M.P.H. (North Carolina)
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*Through 8-31-68.

Jack W. Brehm (1958), Ph.D. (Minnesota)
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Claus Brendel (1967), Ph.D. (Berlin)
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Marianne Breslin (1968), M.D. (Medical Academy, Dusseldorf, Germany)
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Earl I. Brown, II (1960), Ph.D. (Texas)
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Frances Campbell Brown (1931), Ph.D. (Johns Hopkins)
Professor of Chemistry — 1205 Dwire Place

Ivan Willard Brown, Jr. (1940-42; 1945), M.D. (Duke)
James B. Duke Professor of Surgery — 1709 Vista Street

Myrtle Irene Brown (1967), R.N., Ph.D. (New York)
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George W. Brumley, Jr. (1967), M.D. (Duke)
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Mrs. Anne-Marie Bryan (1961), M.A.T. (Duke)
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Professor of Law and Professor of Legal Medicine — 818 Anderson Street

Marion Bryson (1962), Ph.D. (Iowa State)
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Edward Buckley (1963), M.D. (Duke)
Associate Professor of Medicine and Assistant Professor of Microbiology and Immunology — 3621 Westover Road

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†Leave of absence 1968-69.
‡Leave of absence academic year 1968-69.

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Donald Smiley Burdick (1962), Ph.D. (Princeton)
Associate Professor of Mathematics — 108 Emerald Circ
Peter Burian (1968), M.A. (Princeton)
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Peter M. Burkholder (1965), M.D. (Cornell)
Assistant Professor of Pathology — 2815 Welcome Dri
Jacob Burlak (1965), Ph.D. (Cantab.)
Associate Professor of Mathematics — 2736 Montgomery Stre
Richard O. Burns (1964), Ph.D. (Illinois)
Associate Professor of Microbiology — Route 3, Kelly Dri
Ewald W. Busse (1953), M.D. (Washington)
J. P. Gibbons Professor of Psychiatry — 1132 Woodburn Ro
Ronald R. Butters (1967), Ph.D. (Iowa)
Assistant Professor of English — 15 Jefferson Dri
Thomas A. Butters (1968), M.A. (Ohio Wesleyan) — 1504 Lamont Cou
Instructor in Physical Education — Chapel Hill, N.
Gale H. Buzzard (1957), Ph.D. (North Carolina State)
Assistant Professor of Mechanical Engineering — 2716 Tryon Ro
†William Lawrence Byrne (1954), Ph.D. (Wisconsin)
Associate Professor of Biochemistry — 2531 Sevier Stre
¶William D. Caffrey (1968), LL.B. (Duke)
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John B. Cahoon, Jr. (1958), R.T. (Duke)
Assistant Professor of Radiologic Technology — 2418 Perkins Ro
Clark Cahow (1968), Ph.D. (Duke)
Assistant Professor in the Faculty of Arts and Sciences — 1106 Watts Stre
Jasper Lamar Callaway (1937), M.D. (Duke)
James B. Duke Professor of Dermatology — 828 Anderson Stre
Edmund McCullough Cameron (1926), A.B. (Washington & Lee)
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Nancy W. Cameron (1967), M.S.N. (Emory)
Instructor in Nursing — 3812 Noremac Drive, Raleigh, N.
‡Janet E. Campbell (1962), M.A. (Chicago) — East Lake Ann Dri
Assistant Professor of Nursing — Route 8, Raleigh, N.
Ramon V. Canent (1965), M.D. (Santo Tomas, Manila)
Assistant Professor of Pediatrics — 3314 Waterbury Dr
Alfred K. Canterbury (1967), B.S. (U.S.A.F. Academy)
Assistant Professor of Aerospace Studies — 5312 Newhall Rd
M. Paul Capp (1962), M.D. (North Carolina)
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Peter Carbone (1966), Ed.D. (Harvard)
Assistant Professor of Education — 111 Brenrose Cir
Leonard Carlitz (1932), Ph.D. (Pennsylvania)
James B. Duke Professor of Mathematics — 2303 Cranford Rd

*Through 8-31-68.
†Through 8-31-68.
‡Leave of absence 9-1-66 through 8-31-69.
¶Through 5-1-68.

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ck B. Chaddock (1966), Sc.D. (Massachusetts Institute of Technology)
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eon E. Chaiken (1952), M.F. (Cornell)
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thur Christakos (1963), M.D. (South Carolina)
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¶Through 5-31-68.

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Peter B. Clark (1967), Ph.D. (Massachusetts Institute of Technology)
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Frank W. Clippinger (1957), M.D. (Washington)
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John M. Clum (1966), Ph.D. (Princeton) — Apartment N-3
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Harry M. Cocowitch (1967), B.S. (Alabama)
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*Sanford I. Cohen (1957), M.D. (Chicago)
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Apostolos Condos (1966), Ph.D. (Iowa State)
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Hewlette Connell (1968), M.D. (Medical College of Georgia)
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Mary Lee Cook (1968), M.P.N. (North Carolina) — 618-C Hibbar
Instructor in Nursing — Chapel Hill, N. C

*Through 5-31-68.

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Sheila J. Counce (1968), Ph.D. (Edinburgh)
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R. Merritt Cox (1966), Ph.D. (Wisconsin) — Apartment B-14
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Robert Calvin Cox (1942), M.A. (Columbia)
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°Robert Irwin Crane (1961), Ph.D. (Yale)
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Elaine Kobrin Crovitz (1965), Ph.D. (Duke)
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Herbert Crovitz (1963), Ph.D. (Duke)
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°Through 8-31-68.
†Through 5-31-68.
‡Through 8-31-68.

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David George Davies (1961), Ph.D. (California)
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William David Davies (1966), D.D. (Wales)
George Washington Ivey Professor of Advanced Studies in New Testament and Christian Origins 122 Monticello Road
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Gifford Davis (1930), Ph.D. (Harvard)
Professor of Romance Languages 2248 Cranford Road
J. A. Davis (1968), Ph.D. (Columbia) 405 Holly Lane
Adjunct Professor of Education Chapel Hill, N. C.
Morris Davis (1966), Ph.D. (Yale) 404 Estes Drive
Adjunct Professor of Mathematics Chapel Hill, N. C.
Otho L. Davis (1965), M.A. (Kent State)
Assistant Professor of Physical Education 214 Landsbury Street
Eugene Davis Day (1962) Ph.D. (Delaware)
Professor of Immunology and Professor of Experimental Surgery 2727 McDowell Street
†Louis De Alessi (1961), Ph.D. (California)
Associate Professor of Economics 2624 McDowell Street
John Essary Dees (1939), M.D. (Virginia)
Professor of Urology 413 Carolina Circle
Susan Coons Dees (1939), M.D. (Johns Hopkins)
Professor of Pediatrics 413 Carolina Circle
David C. Dellinger (1968), Ph.D. (Stanford)
Associate Professor of Business Administration 2305 Elmwood Avenue
William J. DeMaria (1951), M.D. (Duke)
Professor of Community Health Sciences and Associate Professor of Pediatrics 1126 Woodburn Road
Sara Jamison Dent (1965), M.D. (South Carolina) Route 1, Box 3(
Professor of Anesthesiology Hillsborough, N. C.
Mary Denyes (1967), M.S. (Wisconsin) Apartment D-1.
Instructor in Nursing 2112 Broad Street

†Through 8-31-68.

ydia Ann de Santis (1968), M.N.E. (Pittsburgh)
Instructor in Nursing — 4216 Garrett Road

ohn C. Detwiler (1966), Th.M. (Duke)
Instructor in Pastoral Care — 136 Brenrose Circle

rank Traver de Vyver (1935), Ph.D. (Princeton)
Professor of Economics — 8 Sylvan Road

ving Diamond (1958), Ph.D. (Chicago)
Professor of Psychology — 2745 McDowell Street

oseph Di Bona (1967), Ph.D. (California)
Assistant Professor of Education — 1123 Woodburn Road

uca Di Cecco (1966), M.M. (Indiana)
Assistant Professor of Music — 5418 Beaumont Drive

lacdonald Dick (1932), M.D. (Johns Hopkins)
Assistant Professor of Physiology and Pharmacology and Associate in Medicine — 3005 Norwich Way

obert L. Dickens (1949), M.S. (North Carolina), C.P.A., LL.D.
Professor of Accounting in the Department of Business Administration — 2717 Circle Drive

larcus L. Dillon (1957), M.D. (Duke)
Associate Professor of Surgery — 1005 Minerva Avenue

William O. Dobbins (1965), M.D. (Medical School of Alabama)
Associate Professor of Medicine and Associate in Anatomy — 2431 Tryon Road

larie-Therese Liniere Dow (1934), M.A. (Lyon)
Assistant Professor of Romance Languages — 2252 Cranford Road

leal Dow (1934), Ph.D. (Pennsylvania)
Professor of Romance Languages — 2252 Cranford Road

oger W. Doyle (1967), Ph.D. (Yale)
Assistant Professor of Zoology — 418 Carolina Circle

rancis George Dressel (1929), Ph.D. (Duke)
Professor of Mathematics — 2502 Francis Street

Alden W. Dudley, Jr. (1968), M.D. (Duke)
Assistant Professor of Pathology — 1508 Oakland Avenue

ernard I. Duffey (1963), Ph.D. (Ohio State)
Professor of English — 2732 Dogwood Drive

enneth Lindsay Duke (1940), Ph.D. (Duke)
Associate Professor of Anatomy — 2736 McDowell Street

Frances Yeager Dunham (1962), Ph.D. (Duke) — 2137 Wright Avenue
Assistant Professor of Nursing Education — Greensboro, N. C.

obert F. Durden (1952), Ph.D. (Princeton)
Professor of History — 2532 Wrightwood Avenue

ri Dvorak (1967), Cand. of Science (Czechoslava Academy of Sciences)
Assistant Professor of Civil Engineering — 2956 Friendship Drive

aul H. Earls (1959), Ph.D. (Rochester)
Associate Professor of Music — 1509 Hollywood Street

aul A. Ebert (1966), M.D. (Ohio State)
Associate Professor of Surgery — 4004 Bristol Road

uth Buchanan Eddy (1952), M.S. (Smith)
Associate Professor of Physical Education — 702 Louise Circle

homas A. Edmonds (1968), LL.B. (Duke)
Visiting Associate Professor of Law — 3408 Dover Road

*Through 1-1-69.
†Through 10-1-68.
‡Through 8-31-68.

James Michael Efird (1962), Ph.D. (Duke)
Associate Professor of Biblical Languages and Interpretation Route 7, Box 211, Piney Mt. Roa
Carl Eisdorfer (1958), M.D. (Duke), Ph.D. (New York)
Professor of Medical Psychology and Professor of Psychiatry 2706 Montgomery Stre
*Robert Eisenberg (1965), Ph.D. (University College, London)
Assistant Professor of Physiology and Pharmacology 3503 Mossdale Aven
Jane G. Elchlepp (1960), M.D. (Iowa), Ph.D. (Chicago)
Associate Professor of Pathology Route 1, Cornwallis Roa
Everett H. Ellinwood (1966), M.D. (North Carolina)
Assistant Professor of Psychiatry 3519 Tonbridge Wa
†George J. Ellis (1967), M.D. (Harvard)
Associate in Medicine 3200 Oxford Dri
‡James L. Elmore (1968), M.D. (Tennessee)
Associate in Psychiatry 2327 Anthony Dri
Ernest Elsevier (1950), M.S.M.E. (Georgia Institute of Technology)
Associate Professor of Mechanical Engineering 2412 Wrightwood Aven
Max D. Engelhart (1966), Ph.D. (Illinois)
Lecturer in Education 2419 Perkins Roa
§Mark L. Entman (1967), M.D. (Duke)
Associate in Medicine 73 C Colonial Apartmen
¶Norbert Beverley Enzer (1965), M.D. (McGill)
Assistant Professor of Psychiatry and Associate in Pediatrics 2017 Dartmouth Dri
Carl Erickson (1966), Ph.D. (Rutgers) Apartment 8
Assistant Professor of Psychology Poplar Apartmen
Robert P. Erickson (1961), Ph.D. (Brown)
Associate Professor of Psychology 2601 Tanglewood Dri
E. Harvey Estes, Jr. (1953), M.D. (Emory)
Professor of Medicine and Professor of Community Health Sciences 3542 Hamstead Cou
John C. Evans (1967), M.D. (Michigan) Route 2, Piney Mt. Roa
Professor of Radiology Chapel Hill, N. C
Lawrence E. Evans (1963), Ph.D. (Johns Hopkins)
Associate Professor of Physics 1020 Demerius Stree
John Wendell Everett (1932), Ph.D. (Yale)
Professor of Anatomy 1105 Woodburn Roa
Robinson Oscar Everett (1956), LL.B. (Harvard)
Professor of Law 1200 Leon Street, Apt. G
Henry A. Fairbank (1962), Ph.D. (Yale)
Professor of Physics 1515 Pinecrest Roa
Carmen M. Falcone (1946), M.A. (Ohio State)
Professor of Physical Education 1402 Woodburn Roa
Donn Michael Farris (1959), B.D., M.S. in L.S. (Columbia)
Associate Professor of Theological Bibliography 921 Buchanan Boulevar
Ben W. Feather (1963), M.D. (George Washington), Ph.D. (Duke) Box 340
Assistant Professor of Psychiatry and Lecturer in Psychology Duke Hospit

*Through 8-31-68.
†Through 7-31-68.
‡Through 10-30-68.
§Through 8-15-68.
¶Through 6-30-68.

Andrew Feenberg (1968), M.A. (California at San Diego)	Route 1, Box 117A
Assistant Professor of Philosophy	Pittsboro, N. C.
John Morton Fein (1950), Ph.D. (Harvard)	
Professor of Romance Languages	2726 Montgomery Street
Jerome Feldman (1968), M.D. (Northwestern)	
Associate in Medicine	1609 Hollywood Street
Robert E. Fellows (1966), M.D. (McGill)	3106 Ridge Road
Assistant Professor of Physiology and Assistant Professor of Medicine	
Arthur Bowles Ferguson (1939), Ph.D. (Cornell)	
Professor of History	22 Lebanon Circle
Oliver W. Ferguson (1957), Ph.D. (Illinois)	
Professor of English	1212 Arnette Avenue
Heriberto Alfredo Ferrari (1966), M.D. (Buenos Aires)	
Associate Professor of Anesthesiology	3734 Swarthmore Road
Bernard F. Fetter (1951), M.D. (Duke)	
Professor of Pathology	3836 Somerset Drive
Michael Finger (1965), Ph.D. (North Carolina)	
Assistant Professor of Economics	1000 N. Duke Street, Apt. 41
Ronald L. Fishbaugh (1962), M.S. (Juilliard)	
Instructor in Music	1112 Buchanan Boulevard
Walter L. Floyd (1959), M.D. (Johns Hopkins)	
Associate Professor of Medicine	3556 Hamstead Court
Donald J. Fluke (1958), Ph.D. (Yale)	
Professor of Zoology	2703 Sevier Street
Diane G. Fogleman (1966), M.S. (North Carolina)	
Instructor in Nursing	4424 South Alston Avenue
Lloyd R. Fortney (1964), Ph.D. (Wisconsin)	
Assistant Professor of Physics	1200 Leon Street, Apt. G2
Sidney R. Fortney (1968), M.D. (Duke)	
Associate in Medicine	3212 Sherbon
Ellen Gwendolyn Fortune (1964), M.A. (Western Reserve)	
Associate Professor of Nursing	5203 Shady Bluff Road
Marianka Fousek (1965), Ph.D. (Harvard)	
Assistant Professor of Religion	2722 Erwin Road
Donald R. Fowler (1967), M.D. (Southwestern Medical School of Texas)	
Assistant Professor of Psychiatry	Route 5, Box 564
Earle Cabell Fowler (1962), Ph.D. (Harvard)	Lake Shore Drive
Professor of Physics	Chapel Hill, N. C.
John Alvis Fowler (1953), M.D. (Bowman Gray)	
Professor of Psychiatry and	
Assistant Professor of Pediatrics	1514 Edgevale Road
Wallace Fowlie (1964), Ph.D. (Harvard)	
James B. Duke Professor of Romance	
Languages	17-D Valley Terrace Apartments
James Fox (1968), D.Phil. (Oxon.)	
Visiting Assistant Professor of Sociology	
and Anthropology	1635 Greenbriar Road
Richard Fox (1968), Ph.D. (Michigan)	124 W. Queen Street,
Associate Professor of Anthropology	Hillsborough, N. C.
Charles H. Frenzel (1956), B.A. (Duke)	
Professor of Hospital Administration	3950 Bristol Road

*Through 8-31-68.
†Through 8-31-68.

Irwin Fridovich (1958), Ph.D. (Duke)
Associate Professor of Biochemistry — 3517 Courtland Drive
§Ruth Friedberg (1961), M.A. (North Carolina)
Assistant Professor of Music — 2305 Elmwood
°Samuel J. Friedberg (1960), M.D. (Pennsylvania)
Associate Professor of Medicine — 2305 Elmwood
John A. Friedrich (1963), Ph.D. (Michigan State)
Professor of Physical Education — 2953 Welcome Drive
William J. Furbish (1954), M.S. (Wisconsin) — Route 2
Associate Professor of Geology — Hillsborough, N. C.
Mercedes Gaffron (1958), Ph.D. (Berlin), M.D. (Munich)
Associate Research Professor of Psychology — 1612 Maryland Avenue
‡Peter W. Gage (1968), Ph.D. (Australian National University)
Assistant Professor of Physiology — 821 Onslow Street
Thomas Muir Gallie, Jr. (1954), Ph.D. (Rice)
Professor of Mathematics and
Professor of Biomathematics — 2740 Montgomery Street
Ila H. Gehman (1959), Ed.D. (Pennsylvania State)
Associate Professor of Medical Psychology in
Department of Psychiatry and Lecturer in Psychology — 2703 Spencer Street
W. Scott Gehman, Jr. (1954), Ph.D. (Pennsylvania State)
Professor of Psychology in Education — 2703 Spencer Street
John A. Gehweiler (1967), M.D. (Duke)
Associate in Radiology — 3551 Hamstead Court
Ernest A. E. Gellhorn (1966), LL.B. (Minnesota)
Associate Professor of Law — 2517 Wrightwood Avenue
Rhett Truesdale George, Jr. (1957), Ph.D. (Florida)
Assistant Professor of Electrical Engineering — 3803 Tremont Drive
Nicholas G. Georgiade (1951), D.D.S., M.D. (Duke)
Professor of Plastic Maxillofacial and Oral Surgery — 2523 Wrightwood Avenue
Carl J. Gerber (1963), Ph.D. (Washington)
Assistant Professor of Neurology and Associate in Physiology — 116 Montclair
Gerald E. Gerber (1962), Ph.D. (Northwestern)
Assistant Professor of English — 2602 Francis Street
Barbara B. Germino (1965), B.S.N. (Duke) — Route 1, Box 20
Instructor in Nursing — Murphy School Road
Robert George Ghirardelli (1962), Ph.D. (California Institute of Technology)
Visiting Assistant Professor of Chemistry — 1404 Anderson Street
Daniel T. Gianturco (1966), M.D. (Buffalo)
Assistant Professor of Psychiatry — 2925 Friendship Road
Robert H. Gibbs (1964), M.D. (Duke)
Assistant Professor of Medicine — 2650 University Road
Nicholas W. Gillham (1968), Ph.D. (Harvard)
Associate Professor of Zoology — 2703 Sevier Street
†Donald Gillin (1959), Ph.D. (Stanford)
Associate Professor of History — 1300 Georgia Avenue
S. Malcolm Gillis (1967), Ph.D. (Illinois)
Assistant Professor of Economics — 69-C Colonial Apartments

°Through 6-30-68.
†Through 8-31-68.
‡Through 9-30-68.
§Through 8-31-68.

§James P. Gills (1965), M.D. (Duke)
Assistant Professor of Ophthalmology — 2528 Wrightwood Avenue

Fred L. Ginn (1968), M.D. (Duke)
Associate in Pathology — 2602 Broad Street

Donald E. Ginter (1963), Ph.D. (California at Berkeley)
Associate Professor of History — 1918 Dartmouth Drive

John G. Giragos (1968), M.D. (American Univ. Medical School, Beirut, Lebanon)
Assistant Professor of Psychiatry — 28-E Valley Terrace Apartments

Sherwood Githens, Jr. (1962), Ph.D. (North Carolina)
Professor of Education — 4427 Chapel Hill Road

James F. Glenn (1963), M.D. (Duke)
Professor of Urology — 27 Oak Drive

Clarence Gohdes (1930), Ph.D. (Columbia)
James B. Duke Professor of English — 2737 Circle Drive

Joseph Leonard Goldner (1950), M.D. (Nebraska)
Professor of Orthopaedic Surgery — 602 East Forest Hills Boulevard

Leonard J. Goldwater (1968), M.D. (New York Univ.)
Visiting Scholar in the Department of Community Health Sciences — Route 3, Box 50, Chapel Hill, N. C.

Richard A. Goodling (1959), Ph.D. (Pennsylvania State)
Professor of Pastoral Psychology — Route 7, Box 308, Farrington Road

Jack K. Goodrich (1965), M.D. (Tennessee)
Associate Professor of Radiology — 2940 Welcome Drive

W. Eugene Goodrich (1968), M.A. (Duke)
Temporary Instructor of History — 3311-C Mordecai Street

Crawfurd D. Goodwin (1962), Ph.D. (Duke)
Professor of Economics — 2256 Cranford Road

Walter Gordy (1946), Ph.D. (North Carolina), LL.D.
James B. Duke Professor of Physics — 2521 Perkins Road

John A. Goree (1959), M.D. (Duke)
Associate Professor of Radiology — Route 7, Box 223A

Ralph J. Gorten (1963), M.D. (Pennsylvania)
Assistant Professor of Medicine and Assistant Professor of Radiology — 2436 Tryon Road

Virginia Gover (1960), M.S.N. (Boston College)
Assistant Professor of Nursing — 2722 Brown Avenue

James D. Graham (1967), Ph.D. (Northwestern)
Assistant Professor of History — 1713 James Street

Lindsay A. Graham (1965), M.D. (McGill)
Assistant Professor of Psychiatry — 2918 Friendship Road

Richard Babson Grant (1952), Ph.D. (Harvard)
Professor of Romance Languages — 2509 Wrightwood Avenue

Fred Q. Graybeal (1968), M.D. (Duke)
Associate in Pathology — 3022 Chapel Hill Road

Robert Lee Green, Jr. (1960), M.D. (Hahnemann)
Associate Professor of Psychiatry — 3700 Hermine Street

Charles W. Greenbaum (1968), Ph.D. (New York Univ.)
Visiting Associate Professor of Psychology — 2123 Summit Street

Ronald C. Greene (1958), Ph.D. (California Institute of Technology)
Assistant Professor of Biochemistry — 1014 Norwood Avenue

*Through 6-30-68.
§Through 6-15-68.

Joseph C. Greenfield (1962), M.D. (Emory)
Associate Professor of Medicine and Assistant Professor of Physiology — 1212 Virginia Avenue

John R. Gregg (1957), Ph.D. (Princeton)
Professor of Zoology — 3702 Randolph Road

Robert A. Gregg (1961), M.D. (South Carolina)
Associate Professor of Physical Medicine — 2747 Sevier Street

Eugene Greuling (1948), Ph.D. (Indiana)
Professor of Physics — 2414 Perkins Road

Keith Sanford Grimson (1930-42; 1945), M.D. (Rush)
Professor of Surgery — 3313 Devon Road

Egil Grislis (1959), B.D., Ph.D. (Yale)
Associate Professor of Historical Theology — 2323 Englewood Avenue

Samson R. Gross (1960), Ph.D. (Columbia)
Professor of Genetics and Biochemistry — 2411 Prince Street

Roderick L. Guerry, Jr. (1968), M.D. (Medical College of Georgia)
Associate in Pathology — 109 Newell Street

Walter R. Guild (1960), Ph.D. (Yale)
Professor of Biophysics — 2625 McDowell Street

J. Caulie Gunnells (1962), M.D. (South Carolina)
Assistant Professor of Medicine — 3317 Devon Road

Jordan U. Gutterman (1968), M.D. (Medical College of Virginia)
Associate in Medicine — 44 B Colonial Apartments

Norman Guttman (1951), Ph.D. (Indiana)
Professor of Psychology — 201 Woodridge Drive

*Robert A. Guyer (1964), Ph.D. (Cornell)
Assistant Professor of Physics

Robert Lee Habig (1968), Ph.D. (Purdue)
Associate in Biochemistry — 115 Bennett Court

Donald B. Hackel (1960), M.D. (Harvard)
Professor of Pathology — 4018 Bristol Road

Herbert Hacker, Jr. (1965), Ph.D. (Michigan)
Associate Professor of Electrical Engineering — 2739 Montgomery Street

Ellis P. Hagler (1936)
Instructor in Physical Education — 1715 Cornwallis Road

Dwight Hubert Hall (1968), Ph.D. (Purdue)
Assistant Professor of Biochemistry — 3816 Hillgrand Drive

Hugh Marshall Hall (1952), Ph.D. (Texas)
Professor of Political Science — 2413 Wrightwood Avenue

Jack R. Hall (1965), M.A. (Georgia)
Assistant Professor of Physical Education — 3329 Rolling Hill Road

Kenneth D. Hall (1958), M.D. (Duke)
Professor of Anesthesiology — 2715 Montgomery Street

Louise Hall (1931), Ph.D. (Radcliffe)
Professor of Architecture — Box 6636, College Station

Thor Hall (1962), Ph.D., B.D. (Duke)
Associate Professor of Preaching and Theology — 3537 Hamstead Court

John Hamilton Hallowell (1942), Ph.D. (Princeton)
Professor of Political Science — 3606 Darwin Road

Iain Hamilton (1962), B.M. (London) — Erwin Apartments
Mary Duke Biddle Professor of Music — Buchanan Boulevard

William Baskerville Hamilton (1936), Ph.D. (Duke) — 300 Swift Avenue
Professor of History — Alastair Court Apartments

*Leave of absence academic year 1968-71.

Note: pp. 25-32 are bound between pp. 48+49.

John C. LeMay (1961), D.V.M. (Georgia) — Route 8, Box 347
Associate Professor of Veterinary Medicine — Goodwin Road

Warren Lerner (1961), Ph.D. (Columbia)
Associate Professor of History — 2104 Dartmouth Drive

Lawrence Lessin (1968), M.D. (Chicago)
Associate in Medicine — 3718 Randolph Road

Richard G. Lester (1965), M.D. (Columbia)
Professor of Radiology — 2703 Montgomery Avenue

Donald S. Leventhal (1965), Ph.D. (Purdue)
Assistant Professor of Medical Psychology in the Department of Psychiatry — 4002 Hillgrand Circle

Judith Charlotte Levinson (1968), Ph.D. (Harvard)
Assistant Professor of English — 62-A Colonial Apartments

David Edmund Lewis (1968), M.A. (Northern Michigan)
Associate in Community Health Sciences — 3330 Swansea

Harold Walter Lewis (1946), Ph.D. (Duke)
Professor of Physics — 1708 Woodburn Road

Martha Modena Lewis (1933), M.A. (Columbia)
Professor of Physical Education — 407 Erwin Apartments

Ralph Elton Lewis (1941), M.S. in M.E. (Illinois)
Assistant Professor of Mechanical Engineering — 1401 Alabama Avenue

Melvin Lieberman (1968), Ph.D. (Downstate Medical Center)
Assistant Professor of Physiology and Pharmacology — 426 Green Street

John L. Lievsay (1962), Ph.D. (Washington)
Professor of English — 2725 Montgomery Street

Darwyn E. Linder (1965), Ph.D. (Minnesota)
Assistant Professor of Psychology — 4029 Nottaway Road

L. Sigfred Linderoth (1965), M.E. (Iowa State)
Professor of Mechanical Engineering — 2220 Whitley Drive

Charles Harris Livengood, Jr. (1946), LL.B. (Harvard)
Professor of Law — 2804 Chelsea Circle

Daniel A. Livingstone (1956), Ph.D. (Yale)
Professor of Zoology — 626 Starmont Drive

Charles E. Llewellyn, Jr. (1955), M.D. (Medical College of Virginia)
Associate Professor of Psychiatry — 3550 Hamstead Court

Jane Marie Lloyd (1961), M.A. (North Carolina)
Assistant Professor of Physical Education — 704 Louise Circle

Gregory Lockhead (1965), Ph.D. (Johns Hopkins)
Associate Professor of Psychology — 101 Emerald Circle

Ernest Croft Long (1956), M.B., B.S., Ph.D. (London)
Professor of Community Health Sciences; Associate Professor of Physiology and Pharmacology; and Associate in Pediatrics — Route 7, Box 218 Erwin Road

William K. Longley (1968), Ph.D. (Birkbeck College, London)
Assistant Professor of Anatomy — 12-A Chesterfield Apartments

Raul I. Lopez (1968), M.D. (Florida)
Associate in Neurology in Department of Medicine — 1017 Anderson Street

James R. Lord (1967), Th.M. (Duke)
Instructor in Religion — 1000 N. Duke Street, Apt. 19

Hans Lowenbach (1940), M.D. (Hamburg) — Route 3, Box 273
Professor of Psychiatry and Assistant Professor of Pediatrics — Old Apex Road

Patricia Barlow Lowery (1968), M.S.N. (Duke) — 1314 Doylin Drive
Instructor in Nursing — **Chapel Hill, N. C.**

William S. Lynn, Jr. (1954), M.D. (Columbia)
Professor of Medicine and Associate Professor of Biochemistry 4014 Bristol Road
George W. Lynts (1965), Ph.D. (Wisconsin)
Assistant Professor of Geology 3328 Rolling Hill Road
George M. Lyon, Jr. (1967), M.D. (Duke)
Assistant Professor of Pediatrics 1510 Southwood Drive
Angus M. McBryde (1931), M.D. (Pennsylvania)
Professor of Pediatrics 3406 Westover Road
Kenneth Scott McCarty (1959), Ph.D. (Columbia)
Professor of Biochemistry 2713 Dogwood Road
Thomas E. McCollough (1961), Th.D. (Southern Baptist Theological Seminary)
Associate Professor of Religion 2227 Cranford Road
Donald E. McCollum (1962), M.D. (Bowman Gray)
Associate Professor of Orthopaedic Surgery 2207 Wilshire Drive
William Charles McCormack (1964), Ph.D. (Chicago)
Associate Professor of Sociology 1326 Welcome Circle
Alice L. McCrea (1961), M.S. (Chicago)
Assistant Professor of Radiation Therapy Route 2, Umstead Road
*Betty Foster McCue (1964), Ph.D. (Iowa State)
Professor of Physical Education 3349 Denise Street
†Frederick D. McFalls (1962), M.D. (Duke)
Assistant Professor of Anatomy 911 Morehead Avenue
James Arthur McFarland (1968), M.D. (Johns Hopkins)
Assistant Professor of Community Health Sciences 2704 Sevier Street
‡John S. McGee (1962), Ph.D. (Vanderbilt)
Professor of Economics 2704 Sevier Street
Gelolo McHugh (1946), Ph.D. (Columbia)
Associate Professor of Psychology 1010 Monmouth Avenue
Robert S. McIlwaine (1967), M.A. (Duke)
Temporary Instructor in English 1016 Wells Street
Henry Deane McIntosh (1955), M.D. (Pennsylvania)
Professor of Medicine 2705 Stuart Drive
John C. McKinney (1957), Ph.D. (Michigan)
Professor of Sociology and Professor of Medical Sociology in Department of Psychiatry 1627 Marion Avenue
Mary Helen McLachlan (1958), M.A. (Missouri)
Associate Professor of Dietetics 2022 Bivins Street
Byron D. McLees (1967), M.D. (Duke)
Associate in Medicine 49-C Colonial Apartments
Michael E. McLeod (1966), M.D. (Duke)
Assistant Professor of Medicine 4007 Deepwood Circle
Samuel M. McMahon (1968), M.D. (Ohio State)
Associate in Medicine 5343 Yardley Terrace
Thomas Joseph McManus (1961), M.D. (Boston)
Associate Professor of Physiology and Pharmacology 1408 Oakland Avenue
§Robert E. McMasters (1966), M.D. (Texas) Apartment 28
Associate in Anatomy and Associate in Neurology 1100 Leon Street
Andrew McPhail (1968), Ph.D. (Glasgow)
Associate Professor of Chemistry 220 Forestwood Drive

*Through 8-31-68.
†Through 6-30-68.
‡Through 8-31-68.
§Through 5-16-68.

Harry Thurman McPherson (1955), M.D. (Duke)
Associate Professor of Medicine — 3915 Nottaway Road

John Nelson Macduff (1956), M.M.E. (New York)
Professor of Mechanical Engineering — 2733 Dogwood Road

George L. Maddox (1960), Ph.D. (Michigan State)
Professor of Sociology and Professor of Medical Sociology in Department of Psychiatry — 2750 McDowell Street

Moses Stephen Mahaley (1965), Ph.D. (Duke)
Assistant Professor of Neurosurgery, and Assistant Profesor of Anatomy — 3940 Nottaway Road

Edward P. Mahoney (1965), Ph.D. (Columbia)
Assistant Professor of Philosophy — 918 Monmouth Avenue

Joseph M. Malin, Jr. (1968), M.D. (Georgetown Univ.)
Assistant Professor of Urology in Department of Surgery — 416 Carolina Circle

Peter N. Marinos (1968), Ph.D. (North Carolina State)
Associate Professor of Electrical Engineering — 9-C Anderson Street Apartments

Joseph Eldridge Markee (1943), Ph.D. (Chicago)
James B. Duke Professor of Anatomy — 1015 Demerius Street

Sidney David Markman (1947), Ph.D. (Columbia)
Professor of Art History and Archaeology — 919 Urban Avenue

Arthur Morrison Martin (1968), M.D. (Duke)
Assistant Professor of Pathology — 2411 Pickett Road

David V. Martin (1962), Ed.D. (Duke)
Associate Professor of Education — 2312 Wilson Street

William Francis Martin (1968), B.S. (Cornell)
Assistant Professor of Naval Science — 116 Monterey Lane

†Donald J. Massaro (1967), M.D. (Georgetown)
Associate Professor of Medicine — 2957 Welcome Drive

Raymond Massengill, Jr. (1964), Ph.D. (Virginia)
Associate in Medical Speech Pathology in the Department of Surgery — 2734 Spencer Street

‡Charles U. Mauney (1967), Ph.D. (North Carolina) — 101 Hamilton Road
Associate in Pathology — Chapel Hill, N. C.

F. Maxton Mauney (1967), M.D. (Duke)
Assistant Professor of Surgery and Assistant Professor of Community Health Sciences — 118 Newell Street

Seymour Mauskopf (1964), Ph.D. (Princeton)
Assistant Professor of History — 1900 Glendale Avenue

°William Cary Maxwell (1930), Ph.D. (Heidelberg)
Associate Professor of German — 142 Pinecrest Road

Demmie G. Mayfield (1964), M.D. (Texas)
Assistant Professor of Psychiatry — Apartment 3-301 West Trinity Avenue

§Viola B. Mecke (1968), Ph.D. (Western Reserve University)
Assistant Professor of Medical Psychology in Department of Psychiatry — 2019 Wa Wa Avenue

Otto Meier, Jr. (1934), Ph.D. (Pennsylvania)
Professor of Electrical Engineering — 113 Pinecrest Road

Elgin W. Mellown (1965), Ph.D. (London)
Associate Professor of English — 1108 Minerva Avenue

°Leave of absence 1968-69.
†Through 3-31-68.
‡Through 3-25-68.
§Through 7-31-68.

Lorne Mendell (1968), Ph.D. (Massachusetts Instit. of Tech.) 16-F Sharon Hights
Assistant Professor of Physiology and Pharmacology Chapel Hill, N. C.
Elijah Eugene Menefee, Jr. (1940), M.D. (Duke)
Professor of Medicine 2205 Cranford Road
James L. Meriam (1963), Ph.D. (Yale)
Professor of Engineering Mechanics 3434 Rugby Road
Louis J. Metz (1963), Ph.D. (Duke) 928 Kathryn Street
Adjunct Associate Professor of Forest Soils Cary, N. C.
Richard S. Metzgar (1962), Ph.D. (Buffalo)
Associate Professor of Immunology 3613 Westover Road
Horst Meyer (1959), Docteur ès Sciences (Geneva)
Professor of Physics 1411 Anderson Street
M. Victor Michalak (1950), Ph.D. (Indiana)
Assistant Professor of English 804 Louise Circle
Gustavus H. Miller (1955), Ph.D. (Michigan) Bartram Drive
Assistant Professor of Romance Languages Chapel Hill, N. C.
Elliott Mills (1968), Ph.D. (Columbia)
Assistant Professor of Physiology and Pharmacology 3102 Oxford Drive
Wilma A. Minniear (1964), M.S.N. (Western Reserve)
Associate Professor of Nursing 5203 Shady Bluff Road
Neil Mitchell (1967), M.D. (Ireland) 24 Wisteria Drive
Associate in Psychiatry Asheville, N. C.
Richard A. Mladick (1968), M.D. (Northwestern)
Assistant Professor of Plastic Surgery 1911 House Street
Robert C. Moeller, III (1968), M.A. (Harvard)
Assistant Professor of Art 3742 Bentley Drive
Gerald C. Monsman (1965), Ph.D. (Johns Hopkins)
Assistant Professor of English 1421 N. Mangum Street
Donald M. Monson (1962), M.D. (Wisconsin)
Adjunct Assistant Professor of Radiology 2615 Stuart Drive
John W. Moore (1961), Ph.D. (Virginia) 605 Kenmore Road
Professor of Physiology and Professor of Biomedical Engineering Chapel Hill, N. C.
Lawrence C. Moore, Jr. (1966), Ph.D. (California Institute of Technology)
Assistant Professor of Mathematics 2402 Lednum Street, Apartment C
James J. Morris (1963), M.D. (State Univ. of New York)
Associate Professor of Medicine 2903 Buckingham Road
Montrose J. Moses (1959), Ph.D. (Columbia)
Associate Professor of Anatomy 152 Pinecrest Road
Earl George Mueller (1945), Ph.D. (Iowa)
Professor of Art 1001 Gloria Avenue
Julia Wilkinson Mueller (1939-41; 1946), M.A. (Iowa)
Professor of Music 1001 Gloria Avenue
Bruce Muga (1967), Ph.D. (Illinois)
Assistant Professor of Civil Engineering 1306 West Lakewood Avenue
°Daniel F. Murphy (1966), Ph.D. (Rochester)
Associate in Medical Psychology in Department of Psychiatry and Lecturer in Psychology in Department of Psychology 3019 Mossdale Avenue
†Francis J. Murray (1960), Ph.D. (Columbia)
Professor of Mathematics 1011 Homer Street

°Through 7-10-68.
†Leave of absence 1968-69.

James C. Murray (1967), B.A. (Cornell)
Instructor in Romance Languages — 9-B Anderson Street Apartments

James J. Murray (1967), M.S. (Chicago)
Adjunct Associate Professor of Mechanical Engineering — 809 Hudson Street

A. Wendell Musser (1963), M.D. (Indiana)
Associate Professor of Pathology — 2810 Dogwood Road

Marc J. Musser (1966), M.D. (Wisconsin)
Professor of Medicine — 2756 McDowell Street

†George C. Myers (1968), Ph.D. (Washington)
Professor of Sociology

Hiroshi Nagaya (1966), M.D. (Tokyo)
Assistant Professor of Medicine — 2910 Friendship Road

Toshio Narahashi (1962-63; 1965), Ph.D. (Tokyo)
Associate Professor of Physiology — 812 Archdale Road

Thomas H. Nash, Jr. (1959), B.S.M.E. (Iowa State)
Assistant Professor of Mechanical Engineering — 2527 Wrightwood Avenue

Blaine S. Nashold, Jr. (1957), M.D. (McGill)
Associate Professor of Surgery in Division of Neurosurgery — 410 East Forest Hills Boulevard

Sydney H. Nathans (1966), M.A. (Johns Hopkins) — 804 Tinkerbell Road
Instructor in History — Chapel Hill, N. C.

Dorothy E. Naumann (1963), M.D. (Syracuse)
Associate in Community Health Sciences — 2004 Tampa Avenue

Aubrey Willard Naylor (1952), Ph.D. (Chicago)
Professor of Botany — 2430 Wrightwood Avenue

Thomas Herbert Naylor (1964), Ph.D. (Tulane)
Professor of Economics — 2727 Spencer Street

‡Bohdan Nechay (1966), D.V.M. (Minnesota)
Assistant Professor of Pharmacology and Assistant Professor of Experimental Urology — 1911 House Avenue

°Stanley S. Needell (1965), M.D. (Virginia)
Assistant Professor of Psychiatry — 1400 Welcome Circle

Glenn Robert Negley (1946), Ph.D. (Chicago)
Professor of Philosophy — 3610 Hathaway Road

M. Wilson Nesbitt, Jr. (1957), B.D. (Duke), D.D.
Adjunct Associate Professor of the Work of the Rural Church — 1609 Peace Street

Charles W. Neville, Jr. (1964), M.D. (Vanderbilt)
Assistant Professor of Psychiatry — 56 Woodbury Road, Asheville, N. C.

Barbara Carol Newborg (1952), M.D. (Johns Hopkins)
Associate in Medicine — 1503 Virginia Avenue

Henry Winston Newson (1948), Ph.D. (Chicago)
James B. Duke Professor of Physics — 1111 North Gregson Street

Francis Newton (1967), Ph.D. (North Carolina)
Professor of Latin in the Department of Classical Studies — 2809 Legion Avenue

William McNeal Nicholson (1935), M.D. (Johns Hopkins)
Professor of Medicine — 824 Anderson Street

R. Bruce Nicklas (1965), Ph.D. (Columbia)
Associate Professor of Zoology — 3101 Camelot Court

Harry Stewart Nielsen (1967), Ph.D. (Ohio State)
Assistant Professor of Microbiology — 1314 Gregson Street

°Through 6-8-68.
†Leave of absence 1968-70.
‡Through 3-31-68.

Nancy Nolan (1964), M.Sc. (Ohio State)
Assistant Professor of Nursing — 707 Louise Circle

Loren W. Nolte (1966), Ph.D. (Michigan)
Associate Professor of Electrical Engineering — 4619 Blanchard Road

Robert J. Nordstrom (1968), J.D. (Michigan)
Professor of Law — 2512 N. Duke Street

Sue Norville (1966), M.S.N. (Emory)
Assistant Professor of Nursing — 705 Louise Circle

John B. Nowlin (1967), M.D. (Duke)
Associate in Community Health Sciences — 1310 E Leon Street

Yasuhiko Nozaki (1966), Ph.D. (Tokyo)
Associate in Biochemistry — 2720 Erwin Road

Holger Olof Nygard (1960), Ph.D. (California)
Professor of English — Route 2, Cole Mill Road

John F. Oates (1967), Ph.D. (Yale)
Associate Professor of Ancient History in the Department of Classical Studies — 708 N. Buchanan Boulevard

Walter D. Obrist (1957), Ph.D. (Northwestern)
Professor of Medical Psychology in Department of Psychiatry and Lecturer in Psychology — 2604 McDowell Street

Guy Leary Odom (1943), M.D. (Tulane)
Professor of Neurosurgery — 2812 Chelsea Circle

William M. O'Fallon (1965), Ph.D. (Vanderbilt) — Glen Heights
Assistant Professor of Community Health Sciences — Chapel Hill, N. C.

Billy B. Olive (1960), LL.B. (St. Johns) — Box 280-2, Route 1
Adjunct Associate Professor of Electrical Engineering — Mt. Sinai Road

F. Hodge O'Neal (1959), S.J.D. (Harvard) — Route 1, Box 172
Professor of Law — Mt. Sinai Road

Bernard V. O'Neill, Jr. (1968), Ph.D. (Brown)
Assistant Professor of Mathematics — 702 N. Buchanan Boulevard

*Henry J. Oosting (1932), Ph.D. (Minnesota)
Professor of Botany — 2640 University Drive

Edward Stewart Orgain (1934), M.D. (Virginia)
Professor of Medicine — 3321 Devon Road

Robert Tappan Osborn (1954), B.D., Ph.D. (Drew)
Associate Professor of Religion — 2732 McDowell Street

Shirley K. Osterhout (1967), M.D. (Duke)
Associate in Pediatrics — 600 Starmont Drive

Suydan Osterhout (1959), M.D. (Duke), Ph.D. (Rockefeller Institute)
Associate Professor of Microbiology and Assistant Professor of Medicine — 600 Starmont Drive

Athos Ottolenghi (1959), M.D. (Tavia)
Associate Professor of Pharmacology — 918 Green Street

¶Peter Ove (1968), Ph.D. (Pittsburgh)
Assistant Professor of Clinical Pharmacology — 415 Markham Avenue

Harry Ashton Owen, Jr. (1951), Ph.D. (North Carolina State)
Professor of Electrical Engineering — 2741 McDowell Street

George Padilla (1965), Ph.D. (California)
Associate Professor of Physiology — 2027 Bivins Street

Allen Freeman Page (1968), Ph.D. (Duke)
Instructor in New Testament in the Divinity School — 1438 Ellis Road

*Deceased 10-30-68.
¶Through 1-31-69.

David Paletz (1967), M.A. (California)
Instructor in Political Science — 1311 Carolina Avenue

Aubrey Edwin Palmer (1944), B.S., C.E. (Virginia)
Associate Professor of Civil Engineering — 2525 Highland Avenue

Richard A. Palmer (1966), Ph.D. (Illinois)
Assistant Professor of Chemistry — 126 Pinecrest Road

Erdman B. Palmore (1967), Ph.D. (Columbia)
Associate Professor of Medical Sociology in Department of Psychiatry and Associate Professor of Sociology — 1400 Welcome Circle

Harold Talbot Parker (1939), Ph.D. (Chicago)
Professor of History — 923 Dacian Avenue

Roy T. Parker (1954), M.D. (Virginia)
Professor of Obstetrics and Gynecology — 111 Pinecrest Road

Harry B. Partin (1964), Ph.D. (Chicago)
Assistant Professor of Religion — 2739 Spencer Street

Joel Francis Paschal (1954), Ph.D. (Princeton)
Professor of Law — 1527 Pinecrest Road

Merrill Lee Patrick (1964), Ph.D. (Carnegie Institute of Technology)
Assistant Professor of Mathematics — A-4 1200 Leon Street

Ransom Rathbone Patrick (1954), Ph.D. (Princeton)
Professor of Art History — 116 Pinecrest Road

F. M. S. Patterson (1968), M.D. (Pennsylvania) — 410 Clayton Road
Assistant Professor of Surgery — Chapel Hill, N. C.

Lewis Patton (1926), Ph.D. (Yale)
Professor of English — 614 Swift Avenue

Zdenek Daniel Pauk (1967), M.C. (Iowa)
Assistant Professor of Psychiatry — 3818 Lyckan Parkway

Hilda I. Pavlov (1960), M.A. (Leningrad)
Assistant Professor of Slavic Languages — 709 Reta Road

Michael I. Pavlov (1960), M.A. (Leningrad)
Assistant Professor of Slavic Languages — 709 Reta Road

William Bernard Peach (1951), Ph.D. (Harvard)
Professor of Philosophy — 920 Dacian Avenue

George W. Pearsall (1964), Sc.D. (Massachusetts Institute of Technology)
Professor of Mechanical Engineering — 2941 Welcome Drive

Birger A. Pearson (1966), B.D. (Pacific Lutheran Seminary), Ph.D. (Harvard)
Assistant Professor of Religion — 3212 Pinafore Drive

Talmage Lee Peele (1939), M.D. (Duke)
Professor of Anatomy; Associate Professor of Neurology; Assistant Professor of Pediatrics; and Lecturer in Psychology — KD2 University Apartments

Charles Henry Peete, Jr. (1953), M.D. (Harvard)
Professor of Obstetrics and Gynecology — 42 Beverly Drive

William P. J. Peete (1955), M.D. (Harvard)
Professor of Surgery — 2814 Chelsea Circle

Jacques H. Perivier (1965), Ph.D. (Pennsylvania) — Four Seasons Apartments
Assistant Professor of Romance Languages — 1911 House Avenue

Ronald Perkins (1968), Ph.D. (Indiana) — Apartment E-17
Associate Professor of Geology — 1829 Front Street

Harold Sanford Perry (1932), Ph.D. (Cornell)
Professor of Botany — 2302 Cranford Road

Edythe Mae Persing (1964), M.N. (Western Reserve)
Assistant Professor of Nursing — Route 2, Chapel Hill, N. C.

†Through 8-31-68.

Elbert Lapsley Persons (1930), M.D. (Harvard)
Professor of Medicine and Associate Professor of Community Health Sciences — 723 Anderson Street

Walter Scott Persons (1930), A.B. (Duke)
Associate Professor of Physical Education — 612 Swift Avenue

Ernst Peschel (1953), M.D. (Berlin)
Associate Professor of Medicine — 2306 Pershing Street

Robert H. Peter (1967), M.D. (Duke)
Assistant Professor of Medicine — 2710 McDowell Street

Anton Peterlin (1961), Ph.D. (Berlin)
Adjunct Professor of Chemistry — 1212 Arnette Avenue

Joanne R. Peters (1968), M.A. (Middlebury)
Temporary Instructor in German — 1102 Monmouth Avenue

Ray C. Petry (1937), Ph.D. (Chicago)
James B. Duke Professor of Church History — 128 Pinecrest Road

Olan Lee Petty (1952), Ph.D. (Iowa)
Professor of Education — 2605 McDowell Street

Eric A. Pfeiffer (1966), M.D. (Washington)
Assistant Professor of Psychiatry — 3203 Cromwell Road

John Bernard Pfeiffer, Jr. (1949), M.D. (Cornell)
Associate Professor of Medicine — 3414 Rugby Road

Leland R. Phelps (1961), Ph.D. (Ohio State)
Professor of German — 2255 Cranford Road

James Henry Phillips (1946), Ph.D. (Yale)
Professor of Religion — 2517 Perkins Road

Roberta Phillips (1965), M.S.N.E. (North Carolina)
Assistant Professor of Nursing — Colonial Apartments, 7D

Jane Philpott (1951), Ph.D. (Iowa State)
Professor of Botany — 2260 Cranford Road

Kenneth LeRoy Pickrell (1944), M.D. (Johns Hopkins)
Professor of Plastic Surgery — 3 Sylvan Road

Orrin H. Pilkey (1965), Ph.D. (Florida State) — Route 3, Highway 70
Associate Professor of Geology — Hillsborough, N. C. 27278

Theo Clyde Pilkington (1961), Ph.D. (Duke)
Associate Professor of Biomedical Engineering and Associate Professor of Electrical Engineering — 2718 Spencer Street

Robert A. Pittillo, Jr. (1968), Ed.D. (Duke) — Apartment D-10
Associate Professor of Education — 1829 Front Street

Jacques C. Poirier (1955), Ph.D. (Chicago)
Professor of Chemistry — 210 West Lavender Street

Grace Hilford Polansky (1968), M.S. (Western Reserve)
Associate in Psychiatric Social Work in Department of Psychiatry — 804 Berkley Street

*John Pollard (1967), M.B.Ch.B. (Victoria)
Associate in Anesthesiology — 3022 Chapel Hill Road

Daniel Pollitt (1968), LL.B. (Cornell) — 1018 Highland Woods
Visiting Professor of Political Science — Chapel Hill, N. C.

Louis R. Pondy (1967), Ph.D. (Carnegie Institute of Technology)
Associate Professor of Business Administration and Associate Professor of Community Health Sciences — 1013 Monmouth Avenue

F. Stanley Porter (1964), M.D. (Johns Hopkins)
Associate Professor of Pediatrics — 2609 Cornwallis Road

*Through 3-31-68.

Richard M. Portwood (1959), M.D. (Southwestern) *Assistant Professor of Medicine and Assistant Professor of Community Health Sciences*	54 Beverly Drive
Raymond W. Postlethwait (1955), M.D. (Duke) *Professor of Surgery*	1513 Pinecrest Road
William H. Poteat (1960), B.D., Ph.D. (Duke) *Professor of Christianity and Culture*	621 Greenwood Road Chapel Hill, N. C.
Ian Potter (1968), B.A. (Oxon.) *Temporary Instructor in Zoology*	Bristol Court Apartments A-303 1106 Douglas Street
‡Albert H. Powell, Jr. (1965), M.D. (Duke) *Associate in Psychiatry*	3429 Dover Road
Benjamin E. Powell (1946), Ph.D. (Chicago) *Professor in the Faculty of Arts and Sciences*	3609 Hathaway Road
°Gerald F. Powell (1968), M.D. (Marquette) *Associate in Pediatrics*	220 Monmouth Avenue
Philip C. Pratt (1966), M.D. (Johns Hopkins) *Associate Professor of Pathology*	2707 Sevier Street
Vernon Pratt (1964), M.F.A. (San Francisco Art Institute) *Instructor in Art*	701 Cornwallis Road
Richard Lionel Predmore (1950), D.M.L. (Middlebury) *Professor of Romance Languages*	2535 Sevier Street
Jack J. Preiss (1959), Ph.D. (Michigan State) *Associate Professor of Sociology*	2722 McDowell Street
Richard A. Preston (1965), Ph.D. (Yale) *William K. Boyd Professor of History*	1124 Woodburn Road
James Ligon Price, Jr. (1952), Ph.D. (Cantab.) *Professor of Religion*	2723 Circle Drive
Reynolds Price (1958), B.Litt. (Oxon.) *Associate Professor of English*	Box 4813, Duke Station
Jesse Harris Proctor, Jr. (1958), Ph.D. (Harvard) *Professor of Political Science*	613 Swift Avenue
Jack Hale Prost (1966), Ph.D. (Chicago) *Assistant Professor of Anatomy and Assistant Professor of Anthropology*	807 Onslow Street
A. Kenneth Pye (1966), LL.M. (Georgetown) *Professor of Law*	1200 Leon Apt. G5
Steven H. Quarfordt (1968), M.D. (New York) *Associate in Medicine*	3300 Pinafore Drive
Louis D. Quin (1957), Ph.D. (North Carolina) *Professor of Chemistry*	2740 McDowell Street
Galen W. Quinn (1958), D.D.S. (Tennessee) *Professor of Orthodontics*	806 East Forest Hills Boulevard
†Milton Raben (1964), M.D. (Tufts) *Assistant Professor of Radiation Therapy*	2611 McDowell Street
Thomas T. Rainey (1967), Ph.D. (Illinois) *Assistant Professor of History*	1911 C House Avenue, Apt. 51
K. V. Rajagopalan (1966), Ph.D. (Madras) *Assistant Professor of Biochemistry*	2214 Elmwood Avenue
Charles W. Ralston (1954), Ph.D. (Duke) *Professor of Forest Soils*	2531 Wrightwood Avenue
Cornelius H. Ram (1967), B.S. (Springfield College) *Assistant Professor of Naval Science*	3306 Rolling Hills Road

°Through 6-30-68.
†Through 6-30-68.
‡Through 5-31-68.

Jose Ramirez-Rivera (1968), M.D. (Yale)
Associate Professor of Medicine — 713 W. Cornwallis Road

Dale B. J. Randall (1957), Ph.D. (Pennsylvania)
Associate Professor of English — 2620 University Drive

Robert Stanley Rankin (1927), Ph.D. (Princeton)
Professor of Political Science — 1227 Vickers Avenue

Norman B. Ratliff (1968), M.D. (Duke)
Associate in Pathology — 2114 Sprunt Avenue

Calla Ann Raynor (1962), M.A.T. (North Carolina)
Assistant Professor of Physical Education — 858 Louise Circle

Frank Thompson Read (1968), LL.B. (Duke)
Assistant Professor of Law — 2340 Anthony Drive

Israel Thomas Reamer (1931), Ph.D. (Maryland)
Associate in Pharmacy — 2406 West Club Boulevard

Kenneth James Reardon (1947), M.A. (Boston)
Associate Professor of English — 2511 Winton Road

John B. Reckless (1963), M.D. (Birmingham)
Associate Professor of Psychiatry — 2437 Tryon Road

Wallace E. Reed (1965), Ph.D. (Chicago)
Assistant Professor of Economics — 2508 Sevier Street

*Robert James Reeves (1930), M.D. (Baylor)
Professor of Radiology — 920 Anderson Street

Edward Leo Reilly (1967), M.D. (Seton Hall College of Medicine)
Associate in Psychiatry — 5216 Beaumont Drive

Edmund A. Reiss (1967), Ph.D. (Harvard)
Professor of English — 2725 Montgomery Street

Burton W. Renager (1968), B.S. (Memphis State) — Apartment 4-S
Assistant Professor of Naval Science — 1000 Ruby Street

Eugene M. Renkin (1963), Ph.D. (Harvard)
Professor of Pharmacology — 2028 Pershing Street

A. W. Renuart (1961), M.D. (Duke)
Assistant Professor of Pediatrics — 1201 Shepherd Street

Thomas D. Reynolds (1953), Ph.D. (Duke)
Associate Professor of Mathematics — 2502 Wrightwood Avenue

John McFarlane Rhoads (1956), M.D. (Temple)
Professor of Psychiatry and Lecturer of Pastoral Care in Divinity School — 2404 Prince Street

Reed P. Rice (1965), M.D. (Indiana) — 716 Kenmore Road
Assistant Professor of Radiology — Chapel Hill, N. C.

Lawrence Richardson, Jr. (1966), Ph.D. (Yale)
Professor of Latin in Department of Classical Studies — 1103 North Gregson Street

McMurry S. Richey (1954), B.D., Ph.D. (Duke)
Professor of Theology and Christian Nurture — 2725 Dogwood Road

Mac L. Ricketts (1965), Ph.D. (Chicago)
Assistant Professor of Religion — 3318 Dixon Road

John D. Riebel (1962), M.A. (Duke) — 60 Oakwood Drive
Assistant Professor of Physical Education — Chapel Hill, N. C.

Dana Phelps Ripley (1959), Ph.D. (North Carolina)
Assistant Professor of Romance Languages — 1303 Dollar Avenue

Joann Ritchie (1967), M.N. (Texas Woman's Univ.)
Assistant Professor of Nursing — Apartment B-11, 1829 Front Street

*Deceased 2-24-68.

Nathan Russell Roberson (1963), Ph.D. (Johns Hopkins)
Associate Professor of Physics — 3406 Ogburn Court

Jesse E. Roberts, Jr. (1968), M.D. (Louisiana State)
Associate in Medicine — 2629 Cornwallis Road

John Henderson Roberts (1931), Ph.D. (Texas)
Professor of Mathematics — 2813 Legion Avenue

J. David Robertson (1966), M.D. (Harvard), Ph.D. (Massachusetts Instit. of Tech.)
Professor of Anatomy — 32 Oak Drive

Charles K. Robinson (1961), B.D., Ph.D. (Duke)
Associate Professor of Philosophical Theology — 126 Emerald Circle

Hugh G. Robinson (1964), Ph.D. (Duke
Associate Professor of Physics — 2749 McDowell Street

Roscoe R. Robinson (1962), M.D. (Oklahoma)
Associate Professor of Medicine — 3929 Nottaway Road

Herman Robl (1959-64; 1966), Ph.D. (Vienna)
Adjunct Professor of Physics — 2008 West Club Boulevard

William James Kenneth Rockwell (1968), M.D. (Duke)
Assistant Professor of Psychiatry — 3104 Oxford Drive

Charles A. Rogers (1965), B.D. (Perkins School of Theology)
Assistant Professor of Historical Theology — 2834 Stuart Drive

*Lon Edmond Rogers (1968), M.D. (Texas-Southwestern)
Associate in Pediatrics — Elba Street

Bodo Rollka (1968), Ph.D. (Free University of Berlin)
Visiting Assistant Professor of German — 2420 Vesson Avenue

Christiane Z. Romero (1967), Dr.Phil. (Vienna)
Visiting Assistant Professor of German — 806 Onslow Street

Theodore Ropp (1938), Ph.D. (Harvard)
Professor of History — 302 East Woodridge Drive

Carl M. Rose, Jr. (1967), Ph.D. (Chicago)
Assistant Professor of Physics — 3109 Sherlon Drive

Norman F. Ross (1937), D.D.S. (Temple)
Associate Professor of Dentistry — 2811 Chelsea Circle

Wendell F. Rosse (1966), M.D. (Chicago)
Associate Professor of Medicine — 3553 Hamstead Court

Annette T. Rottenberg (1965), M.A. (Harvard)
Lecturer in English — 1601 Hermitage Court

Simon Rottenberg (1965), Ph.D. (Harvard)
Professor of Economics — 1601 Hermitage Court

John E. Roueché, Jr. (1969), Ph.D. (Florida State)
Adjunct Associate Professor of Education

Peter Brock Rowe (1968), MRACP (Royal Australasian College of Physicians)
Assistant Professor of Medicine — 206 Parthenia Drive

†William Leal Rowe (1963), Ph.D. (Cornell)
Associate Professor of Anthropology — 2206 University Drive

David T. Rowlands, Jr. (1966), M.D. (Pennsylvania)
Associate Professor of Pathology — 1100 Leon Street, Apt. 3

Donald Francis Roy (1950), Ph.D. (Chicago)
Professor of Sociology — 604 North Gregson Street

John Jesse Rudin, II (1945), B.D., Ph.D. (Northwestern)
Associate Professor of Speech and Worship — 1640 Marion Street

Julian Meade Ruffin (1930), M.D. (Virginia)
Professor of Medicine — 816 Anderson Street

*Through 9-30-68.
†Through 8-31-68.

‡Max R. Rumelhart (1965), B.Ed. (Gonzaga), Lt. Cdr., U.S.N.
Associate Professor of Naval Science 3527 Racine Stree
Ralph Wayne Rundles (1945), M.D. (Duke), Ph.D. (Cornell)
Professor of Medicine 132 Pinecrest Roa
Jerome Ruskin (1967), M.D. (Albert Einstein School of Medicine)
Associate in Medicine 709 Ferris Roa
Philip A. Ryan (1968), LL.B. (Harvard) 815 Connecticut Avenue, N.W
Visiting Professor of Law Washington, D. C
Jerome E. Rygorsky (1968), M.D. (Columbia)
Associate in Medicine 527 Green Stree
David Coston Sabiston, Jr. (1964), M.D. (Johns Hopkins)
Professor of Surgery 1528 Pinecrest Roa
Harvey J. Sage (1964), Ph.D. (Yale)
Assistant Professor of Pathology and
Assistant Professor of Biochemistry 30 A Valley Terrac
Andrew J. Saladino (1968), M.D. (Georgetown Univ. College of Medicine)
Associate in Pathology 5-B Triangle Apartments, Kerley Roa
Stephen J. Salchenberger (1967), Ph.D. (Johns Hopkins)
Assistant Professor of Romance Languages 1911 House Avenue, Apt. 4
Herman Salinger (1955), Ph.D. (Yale)
Professor of German 3444 Rugby Roa
Herbert A. Saltzman (1958), M.D. (Philadelphia)
Associate Professor of Medicine 2728 McDowell Stree
John Salzano (1958), Ph.D. (Iowa State)
Associate Professor of Physiology 607 Starmont Driv
Aaron P. Sanders (1956), Ph.D. (North Carolina)
Associate Professor of Radiology and
Assistant Professor of Physiology 2207 Elder Stree
Charles Richard Sanders (1937), Ph.D. (Chicago)
Professor of English 103 Pinecrest Roa
Baxter B. Sapp, Jr. (1960), D.D.S. (Temple)
Associate in Dentistry 3514 Rugby Roa
Eugenia Curtis Saville (1947), M.A. (Columbia)
Associate Professor of Music 1103 Anderson Stree
Lloyd Blackstone Saville (1946), Ph.D. (Columbia)
Professor of Economics 1103 Anderson Stree
Saul M. Schanberg (1967), Ph.D., M.D. (Yale)
Assistant Professor of Neurology and
Assistant Professor of Pharmacology 2516 Sevier Stree
Harold Schiffman (1963), Ph.D. (Princeton)
Associate Professor of Psychology 3415 Hope Valley Roa
Anton Schindler (1968), Ph.D. (Vienna)
Adjunct Professor of Chemistry 1612 Kent Stree
Knut Schmidt-Nielsen (1952), Ph.D. (Copenhagen)
James B. Duke Professor of Physiology % Zoology Departmen
in the Department of Zoology Zoology Dep't., Duke Universit
David W. Schomberg (1968), Ph.D. (Purdue)
Assistant Professor of Obstetrics and Gynecology and
Assistant Professor of Physiology 76-C Colonial Apartment
Daniel M. Schores (1965), Ph.D. (Missouri)
Assistant Professor of Church and Society 2502 Tryon Roa
David P. Schorr, Jr. (1961), M.A.T. (Duke) 104 Laurel Hill Roa
Instructor in Mathematics Chapel Hill, N. C

‡Through 6-1-68.

Esther Louise Schwerman (1947), Ph.D. (Northwestern)
Assistant Professor of English — 909 Lambeth Circle
Anne Firor Scott (1961), Ph.D. (Radcliffe) — 1028 Highland Woods
Associate Professor of History — Chapel Hill, N. C.
William Evans Scott (1958), Ph.D. (Yale)
Associate Professor of History — 1311 Dollar Avenue
Richard A. Scoville (1961), Ph.D. (Yale)
Assistant Professor of Mathematics — 905 Exum Street
Will Camp Sealy (1946), M.D. (Emory)
Professor of Thoracic Surgery — 2232 Cranford Road
Richard B. Searles (1965), Ph.D. (California)
Assistant Professor of Botany — 1708 Bedford Street
Sandra Seeber (1968), M.A. (Duke) — Apartment C
Temporary Instructor in English — 854 Louise Circle
Hilliard Foster Seigler (1967), M.D. (North Carolina)
Assistant Professor of Surgery — 4006 King Charles Street
Robert T. Self (1968), M.A. (Chicago) — 2 Mt. Bolus Road
Temporary Instructor in English — Chapel Hill, N. C.
James Hustead Semans (1953), M.D. (Johns Hopkins)
Professor of Urology — 1415 Bivins Street
Stuart M. Sessoms (1968), M.D. (Medical College of Virginia)
Professor of Medicine — 2750 McDowell Street
Walter E. Sewell (1965), Ph.D. (Harvard)
Adjunct Professor of Mathematics — 2243 Cranford Road
Maxwell E. Shauck, Jr. (1968), Ph.D. (Tulane)
Assistant Professor of Mathematics — 813 Onslow Street
Marion L. Shepard (1967), Ph.D. (Iowa State)
Assistant Professor of Mechanical Engineering — 2911 Friendship Road
Bobby Foster Sherwood (1965), D.V.M. (Georgia)
Associate in Veterinary Medicine — 5020 Autumn Drive
Melvin G. Shimm (1953), LL.B. (Yale)
Professor of Law — 2429 Wrightwood Avenue
William Warner Shingleton (1947), M.D. (Bowman Gray)
Professor of Surgery — 3866 Somerset Drive
Barry M. Shmavonian (1958), Ph.D. (Washington)
Associate Professor of Medical Psychology in Department of Psychiatry and Lecturer in Psychology — 2744 Sevier Street
Joseph Robert Shoenfield (1952), Ph.D. (Michigan)
Professor of Mathematics — 1700 Hillcrest Drive
Marvin J. Short (1967), M.D. (Duke)
Assistant Professor of Psychiatry — 2849 Friendship Road
Mary Jane Showers (1968), Ph.D. (Michigan)
Visiting Professor of Nursing
William Derek Shows (1967), Ph.D. (Duke)
Assistant Professor of Medical Psychology in the Department of Psychiatry; Lecturer in Department of Religion; and Lecturer in Department of Psychology — 2106 Englewood Avenue
R. Baird Shuman (1962), Ph.D. (Pennsylvania)
Professor of Education — 2826 Stuart Drive
James B. Sidbury (1961), M.D. (Columbia)
Professor of Pediatrics — 4044 Nottaway Road

*Through 9-1-68.
†Through 5-31-68.

Lewis Siegel (1968), Ph.D. (Johns Hopkins)
Assistant Professor of Biochemistry — 3006 Glendale Avenue
Herbert O. Sieker (1955), M.D. (Washington)
Professor of Medicine — 204 Forestwood Drive
Bernard Silberman (1967), Ph.D. (Michigan)
Associate Professor of History — 14 Heath Place
Harold R. Silberman (1962), M.D. (Washington)
Assistant Professor of Medicine — 2718 Princeton Drive
Donald Silver (1964), M.D. (Duke)
Associate Professor of Surgery — 2419 Alpine Road
George Addison Silver, III (1946), M.D. (Duke)
Associate Professor of Psychiatry — 3910 Dover Road
William Hays Simpson (1930), Ph.D. (Duke)
Professor of Political Science — 1406 Dollar Avenue
Leroy C. Skinner (1959), M.A. (Maryland)
Assistant Professor of Physical Education — 2018 Sunset Avenue
David Alexander Smith (1962), Ph.D. (Yale)
Associate Professor of Mathematics — 2032 West Club Boulevard
Dwight Moody Smith, Jr. (1965), Ph.D. (Yale)
Associate Professor of New Testament Interpretation — 2728 Spencer Street
Donald S. Smith, II (1961), M.H.A. (Minnesota) — Atlas & Elba Streets
Assistant Professor of Hospital Administration — Apartment 4
Grover C. Smith (1952), Ph.D. (Columbia)
Professor of English — 215 W. Woodridge Drive
Harmon L. Smith (1959), B.D., Ph.D. (Duke)
Associate Professor of Moral Theology — 601 East Markham Avenue
Joel Smith (1958), Ph.D. (Northwestern)
Professor of Sociology — 2712 Sevier Street
L. P. Smith (1967), M.S. (Massachusetts Institute of Technology)
Instructor in Mathematics — 3505 Rugby Road
Peter Smith (1959), Ph.D. (Cantab.)
Associate Professor of Chemistry — 2711 Circle Drive
‡Robert Sidney Smith (1932), Ph.D. (Duke)
James B. Duke Professor of Economics — 2236 Cranford Road
Sandra C. Smith (1967), B.S. (North Carolina) — Route 3, Box 169
Instructor in Nursing — Chapel Hill, N. C.
Wirt W. Smith (1957), M.D. (Texas)
Associate Professor of Experimental Surgery — 3301 Surrey Road
Ralph E. Snider (1960), D.D.S. (Ohio State)
Associate in Dentistry — 2417 Bruton Road
George G. Somjen (1963), M.D. (Amsterdam)
Associate Professor of Physiology and Lecturer in Department of Psychology — 606 Buchanan Boulevard
Joachim R. Sommer (1957), M.D. (Munich)
Associate Professor of Pathology — 2724 Sevier Street
*Mary Jo Sorkness (1968), M.A. (New York Univ.)
Lecturer in Art — 1011 Buchanan Boulevard
Joanne G. Southworth (1967), Ph.D. (Medical College of Virginia)
Associate in Immunology — Route 3, Box 156, Hillsborough, N. C.
Madison S. Spach (1958), M.D. (Duke)
Professor of Pediatrics — 2632 McDowell Street

*Through 7-31-68.
‡Deceased 3-23-69.

Dorothy Spangler (1954), M.A. (North Carolina)
Assistant Professor of Physical Education — 2729 Brown Avenue

Bertel M. Sparks (1966), S.J.D. (Michigan)
Professor of Law — 2409 Perkins Road

Robert L. Spaulding (1965), Ph.D. (Stanford)
Associate Professor of Education — 1516 Woodburn Road

§Marshall Spector (1963), Ph.D. (Johns Hopkins)
Assistant Professor of Philosophy — 4 Holmes Circle

Joseph John Spengler (1934), Ph.D. (Ohio State), D.Hu.L.
James B. Duke Professor of Economics — 2240 Cranford Road

Alexander Spock (1962), M.D. (Maryland)
Associate Professor of Pediatrics — 2414 West Club Boulevard

William C. Spong (1968), Th.M. (Duke)
Lecturer in Clinical Pastoral Education in Divinity School — 124 Ratcliff Circle

George H. Spooner (1965), Ph.D. (North Carolina) — 318 Severin Street
Assistant Professor of Clinical Pathology — Chapel Hill, N. C.

Thomas Spragens (1968), Ph.D. (Duke) — Apartment B-1
Assistant Professor of Political Science — 812 Green Street

David Squire (1962), Ph.D. (Rice)
Visiting Assistant Professor of Chemistry — 3509 Westover Road

Olaf Stackelberg (1963), Ph.D. (Minnesota)
Associate Professor of Mathematics — 2101 W. Club Boulevard

John Staddon (1967), Ph.D. (Harvard)
Assistant Professor of Psychology — 2719 McDowell Street

William J. Stambaugh (1961), Ph.D. (Yale)
Associate Professor of Forest Pathology — 3211 Sherbon Drive

D. Keith Stanley, Jr. (1961), Ph.D. (Johns Hopkins)
Assistant Professor of Classical Studies — C-12 Croasdaile Apartments

James L. Stanley (1966), B.A. (Syracuse)
Air Force Professor of Aerospace Studies — 5204 Newhall Road

Charles Frank Starmer (1966), Ph.D. (North Carolina)
Assistant Professor of Computer Science in the Department of Medicine — 1209 Oakland Avenue

V. K. Stars (1966), M.A. (North Carolina)
Lecturer in Art — 1916 Glendale Avenue

Eugene Anson Stead, Jr. (1947), M.D. (Emory)
Florence McAlister Professor of Medicine — 2122 Campus Drive

Donald John Stedman (1963), Ph.D. (George Peabody)
Associate Professor of Medical Psychology in Department of Psychiatry and Lecturer in Psychology — 134 Chateau Road

Donald H. J. Steensen (1968), Ph.D. (Duke) — 3612 Merwin Road
Visiting Assistant Professor of Forestry — Raleigh, N. C.

Snnsteinn Stefansson (1965), Ph.D. (Copenhagen)
Adjunct Professor of Zoology — Duke Marine Laboratory, Beaufort, N. C.

Robert S. Stempfel, Jr. (1958), M.D. (Vanderbilt)
Professor of Pediatrics and Associate Professor of Physiology — Box 55, Garrett Road

Henry R. Stern (1968), Ph.D. (Northwestern)
Assistant Professor of German — 706 Louise Circle

*Through 8-31-68.
†Through 5-31-68.
‡Through 1-31-68.
§Through 8-31-68.

Lionel Stevenson (1955), Ph.D. (California), F.R.S.L.
James B. Duke Professor of English — 3106 Devon Road

Delford L. Stickel (1962), M.D. (Duke)
Associate Professor of Surgery — 3108 Devon Road

William Frank Stinespring (1936), Ph.D. (Yale)
Professor of Old Testament and Semitics — 1107 Watts Street

Donald E. Stone (1963), Ph.D. (California)
Associate Professor of Botany — 2706 Spencer Street

Virginia Stone (1966), Ph.D. (North Carolina)
Professor of Nursing — 1829 Front Street, Apt. 3A

Victor H. Strandberg (1966), Ph.D. (Brown)
Assistant Professor of English — 2709 Augusta Drive

°John H. Strange (1966), Ph.D. (Princeton)
Assistant Professor of Political Science — 2307 Prince Street

Jeanette Straub (1966), M.A. (Duke)
Assistant Professor of Nursing — 2020 Pershing Street

†Richard Strecker (1968), LL.M. (Harvard)
Visiting Professor of Law — 3620 Hathaway Road

Howard A. Strobel (1948), Ph.D. (Brown)
Professor of Chemistry — 1119 Woodburn Road

‡Frank Ransom Strong (1968), LL.B. (Yale)
Visiting Professor of Law — 211 Markham Drive, Chapel Hill, N. C.

John W. Strong (1966), LL.B. (Illinois)
Associate Professor of Law — 100 Tadley Street, Chapel Hill, N. C.

Margretta M. Styles (1968), Ed.D. (Yale)
Associate Professor of Nursing — 5314 Beaumont Drive

Henry L. Sublett, Jr. (1962), Ed.D. (Virginia)
Associate Professor of Education — 2710 Montgomery Street

Herbert P. Sullivan (1960), Ph.D. (Durham, England)
Associate Professor of Religion and Lecturer in History of Religions — 4011 Deepwood Circle

§John D. Sullivan (1958), Ph.D. (Michigan State)
Associate Professor of Wood Science — 2710 McDowell Street

Elizabeth Read Sunderland (1939-42; 1943), Ph.D. (Radcliffe)
Associate Professor of Art — 6416 College Station

||Robert Oscar Swan (1961), Ph.D. (Pennsylvania)
Associate Professor of Hindi-Urdu — 3416 Cromwell Road

Louis Earl Swanson (1949), A.B. (Hamline)
Associate Professor of Hospital Administration — 2418 Wrightwood Avenue

John Skyes (1968), Ph.D. (Birmingham)
Assistant Professor of Physics — 408 Hammond Street

Geraldine Talarczyk (1968), M.S. (Wisconsin)
Instructor in Nursing — Apartment E-62, 2112 Broad Street

Elizabeth Bullock Talbot (1968), M.M. (North Carolina)
Instructor in Music — 206 Cottage Lane, Chapel Hill, N. C.

Ingeborg Hildebrand Talton (1968), M.D. (Medical School, Giessen, Germany)
Assistant Professor of Anesthesiology — 2406 Tampa Avenue

Charles Tanford (1960), Ph.D. (Princeton)
Professor of Physical Biochemistry — Apartment 49, 1000 N. Duke Street

°Through 8-31-68.
†Through 8-31-68.
‡Through 1-31-69.
§Through 2-29-68.
||Through 8-31-68.

Note: pp. 25-32 are bound between pp. 48 and 49.

Charles B. Hammond (1968), M.D. (Duke)
Associate in Obstetrics and Gynecology — 3521 Mossdale Avenue

William E. Hammond (1968), Ph.D. (Duke)
Assistant Professor of Community Health Sciences — 10 Forrestdale Drive

Moo Young Han (1967), Ph.D. (Rochester)
Assistant Professor of Physics — Apartment E-2, 1200 Leon Street

Philip Handler (1939), Ph.D. (Illinois)
James B. Duke Professor of Biochemistry and Nutrition — 2529 Perkins Road

°Robert M. Hankin (1966), M.A. (Columbia)
Assistant Professor of Slavic Languages — 111 West Seeman Street

John Kennedy Hanks (1954), M.A. (Columbia)
Professor of Music and Lecturer in Church Music — 1810 Glendale Avenue

Frank Allan Hanna (1948), Ph.D. (Wisconsin)
Professor of Economics — 2239 Cranford Road

Oscar Carl Edvard Hansen-Prüss (1930), M.D. (Johns Hopkins)
Professor of Medicine — 3303 Surrey Road

‡Paul Hardin, III (1958), LL.B. (Duke)
Professor of Law and Assistant Professor of Legal Medicine — 2708 Sevier Street

Elizabeth B. Harkins (1968), M.S.W. (Pittsburgh)
Associate in Psychiatry — 6 Buena Vista Road, Asheville, N. C.

Charles M. Harman (1961), Ph.D. (Wisconsin)
Associate Professor of Mechanical Engineering — 2620 McDowell Street

Ellwood Scott Harrar (1936), Ph.D. (Syracuse), Sc.D.
James B. Duke Professor of Wood Science — 2228 Cranford Road

Philip D. Harriman (1968), Ph.D. (California at Berkeley)
Assistant Professor of Biochemistry — 2212 Myers Street

Cecil Craig Harris (1967), M.S. (Tennessee)
Assistant Professor of Medical Electronics — 2910 Welcome Drive

Harold Joseph Harris (1960), M.D. (Long Island College of Medicine)
Associate Professor of Psychiatry and Assistant Professor of Pediatrics — 1702 N. Roxboro Road

Jerome Sylvan Harris (1936), M.D. (Harvard)
J. Buren Sidbury Professor of Pediatrics and Associate Professor of Biochemistry — 2907 Hope Valley Road

James E. Hart (1966), A.B. (Harvard)
Assistant Professor of Political Science — 500 Watts Street

Robert B. Hartford (1968), M.A. (Georgia)
Assistant Professor of Sociology and Anthropology — 540 Green Street

Michael J. Hartley (1968), B.A. (Carleton)
Assistant Professor of Economics — 76-D Colonial Apts.

William John Harvey (1961), B.S. (Appalachian)
Assistant Professor of Physical Education — Route 2, Russell Road

George Corbin Harwell (1935), Ph.D. (Duke)
Associate Professor of English — 2115 Wilson Street

Charles Roy Hauser (1929), Ph.D. (Iowa)
James B. Duke Professor of Chemistry — 1020 Rosehill Avenue

Clark C. Havighurst (1964), J.D. (Northwestern)
Professor of Law — 3610 Dover Road

Charles P. Hayes (1964), M.D. (Duke)
Assistant Professor of Medicine — 3820 Hillgrand Circle

°Through 8-31-68.
‡Through 8-31-68.

John James Hayes (1968), M.H.A. (Washington Univ.)
Assistant Professor of Community Health Sciences — 13-C Colonial Apartments
William S. Heckscher (1966), Ph.D. (Hamburg) — P. O. Box 6605
Benjamin N. Duke Professor of Art — College Station
Peter L. Hein (1963), M.D. (Georgetown)
Associate Professor of Psychiatry — 2511 Perkins Road
||Ursula I. Heine (1965), Ph.D. (Humboldt)
Associate in Experimental Surgery — 1200 Leon Street, Apartment D-7
*Martin Helling (1965), Ph.D. (Berkeley)
Assistant Professor of Mathematics — 1007 Oakland Avenue
Henry Hellmers (1965), Ph.D. (California)
Professor of Botany — 1012 Norwood Avenue
James Paisley Hendrix (1938), M.D. (Pennsylvania)
Professor of Medicine and Therapeutics — 144 Pinecrest Road
Robert W. Henkens (1968), Ph.D. (Yale)
Assistant Professor of Chemistry — 2116 Pershing Street
James Donald Henry (1960), M.M. (Indiana)
Assistant Professor of Music — 311 West Delafield Street
Stuart C. Henry (1959), B.D., Ph.D. (Duke)
Professor of American Christianity — K-1-A University Apartments
C. Ward Henson (1967), Ph.D. (Massachusetts Institute of Technology)
Assistant Professor of Mathematics — 1702 Vista Street
Stephen Duncan Heron, Jr. (1950), Ph.D. (North Carolina)
Associate Professor of Geology — Route 1, Box 92
David G. Herr (1967), Ph.D. (North Carolina)
Assistant Professor of Mathematics — 3112 Camelot Street
†Javier Herrero (1966), Ph.D. (Madrid)
Professor of Romance Languages — 1013 Demerius Street
Frederick L. Herzog (1960), Th.D. (Princeton)
Professor of Systematic Theology — 2936 Chapel Hill Road
Julia G. Hester (1965), M.S. (North Carolina)
Assistant Professor of Nursing — Colonial Apartments, 7 D
‡Stephen L. Hester (1967), LL.B. (Harvard) — Colony Apartments, L-20
Visiting Assistant Professor of Law — Chapel Hill, N. C.
Siegfried Heyden (1966), M.D. (Berlin)
Associate Professor of Community Health Sciences — 1407 Arnette Avenue
Albert Heyman (1953), M.D. (Maryland)
Professor of Medicine — 1216 Woodburn Road
Jacqueline Hijmans (1965), M.D. (State University, Leyden, Holland)
Associate in Medicine — 2907 Hope Valley Road
Burke J. Hill (1968), Ph.D. (Rhodes)
Temporary Instructor in Zoology — 907 W. Proctor Street
David W. Hill (1962), Ph.D. (Stanford)
Associate Professor of Engineering Mechanics in Department of Civil Engineering — 205 Wood Circle, Chapel Hill, N. C.
§Douglas Greenwood Hill (1931), Ph.D. (Princeton)
Professor of Chemistry — Box 275, Route 2, Pleasant Green Road
Gale B. Hill (1967), Ph.D. (Duke) — 4300 W. Galax Drive
Associate in Radiology — Raleigh, N. C.

*Through 8-31-68.
†Through 8-31-68.
‡Through 8-31-68.
§Deceased 5-31-68.
||Through 7-31-68.

Robert L. Hill (1961), Ph.D. (Kansas)
Professor of Biochemistry — 2510 Perkins Avenue

Hans J. Hillerbrand (1959), Ph.D. (Erlangen)
Professor of Modern Church History and Professor of History — 2729 Sevier Street

Brian Andrew Hills (1968), Ph.D. (Adelaide)
Associate Professor of Experimental Surgery and Associate Professor of Biomedical Engineering — 2750 McDowell

Frederick R. Hine (1958), M.D. (Yale)
Associate Professor of Psychiatry — 2317 Prince Street

Isidore Isaac Hirschman, Jr. (1968), Ph.D. (Harvard)
Visiting Professor of Mathematics — 2736 Montgomery Street

Richard D. Hobbet (1968), J.D. (Iowa)
Professor of Law — 2742 Circle Drive

Marcus Edwin Hobbs (1935), Ph.D. (Duke)
Professor of Chemistry — 115 Pinecrest Road

‡William H. Hobbs (1967), B.S. (Virginia Polytechnic Institute), Lt., U.S.N.R.
Assistant Professor of Naval Science — Colonial Apartments, 46 D

Paul E. Hochstein (1963), Ph.D. (Maryland)
Associate Professor of Pharmacology — 2717 Spencer Street

Richard Earl Hodel (1965), Ph.D. (Duke)
Assistant Professor of Mathematics — Colonial Apartments

Charles S. Hodges, Jr. (1963), Ph.D. (Georgia) — 2012 Nancy Ann Drive
Adjunct Associate Professor of Forest Pathology — Raleigh, N. C.

Charlotte Hogsett (1965), Ph.D. (Harvard)
Assistant Professor of Romance Languages — 427 Green Street

Carol Clarke Hogue (1963), M.S.N. (Duke)
Assistant Professor of Nursing — 2913 Welcome Drive

Irving Brinton Holley, Jr. (1947), Ph.D. (Yale)
Professor of History — 2506 Wrightwood Avenue

Peter W. Holloway (1967), Ph.D. (Manchester University)
Associate in Biochemistry — Morreene Manor, Apt. H2

Frederic B. M. Hollyday (1956), Ph.D. (Duke)
Associate Professor of History — 1824 Forest Road

Frances Virginia Lee Holton (1947), M.A. (Texas State)
Associate Professor of Physical Education — 407 Erwin Apartments

°Everett Harold Hopkins (1961), A.M. (Pennsylvania) LL.D.
Professor of Education — 1520 Pinecrest Road

Edward Charles Horn (1946), Ph.D. (Princeton), Sc.D.
Professor of Zoology — 818 East Forest Hills Boulevard

Paul Horowicz (1961), Ph.D. (Johns Hopkins)
Associate Professor of Physiology — 216 West Woodridge Drive

Theresa Elizabeth Horton (1964), M.S.N.E. (Pittsburgh) — Apartment 3
Assistant Professor of Nursing — 810 Clarendon Street

Dennis Robert Howard (1968), M.D. (Wisconsin)
Associate in Department of Community Health Sciences — 5502 Beaumont Drive

Betty Lee Hubbard (1967), Ph.D. (North Carolina)
Associate in Psychiatry — 35 Hamilton Road, Chapel Hill, N. C.

William R. Hudson (1961), M.D. (Bowman Gray)
Professor of Otolaryngology — 504 Compton Place

°Leave of absence 6-1-67 through 5-31-69.
‡Through 11-1-68.

Thomas A. Huff (1968), M.D. (Emory)
Associate in Medicine — 2504 Vineyard Street
Alexander Hull (1962), Ph.D. (Washington)
Associate Professor of Romance Languages — 2318 Prince Street
Wanda Sanborn Hunter (1947), Ph.D. (California) — 216 Ann Street
Associate Professor of Zoology — Beaufort, N. C.
Allan S. Hurlburt (1956), Ph.D. (Cornell)
Professor of Education — 112 Buchanan Boulevard
Mary Martin Huse (1959), Ph.D. (Duke)
Assistant Professor of Medical Psychology in Department of Psychiatry and Lecturer in Psychology — Route 7, Box 270, Ephesus Chapel Road
O. Kelly Ingram (1959), B.D. (Duke)
Associate Professor of Applied Theology — 2728 Sevier Street
Sheldon Isenberg (1968), M.A. (Harvard)
Assistant Professor of Religion — 5 C Anderson Street Apartments
Jacquelyne J. Jackson (1968), Ph.D. (Ohio State)
Assistant Professor of Medical Sociology in Department of Psychiatry — 2910 Kanewood Drive
Robert M. Jackson (1968), Ph.D. (Harvard) — Apartment 44
Assistant Professor of Romance Languages — 1000 N. Duke Street
Wallace Jackson (1965), Ph.D. (Pennsylvania)
Assistant Professor of English — 1006 West Knox Street
Ann Madeline Jacobansky (1953), M.Ed. (Pittsburgh)
Professor of Nursing — 1200 Leon Street, Apt. H-8
Miriam J. Jacobs (1968), Ph.D. (Alabama) — Apartment D-14
Assistant Professor of Anatomy — 1829 Front Street
Peter Walter Jeffs (1964), Ph.D. (Natal)
Associate Professor of Chemistry — 3209 Cromwell Road
Marianna Duncan Jenkins (1948), Ph.D. (Byrn Mawr)
Associate Professor of Art — 1000 N. Duke Street
Alan W. Jenks (1966), Th.D. (Harvard)
Assistant Professor of Religion — 2904 Herring Boulevard
Bronislas de Leval Jezierski (1958), Ph.D. (Harvard)
Associate Professor of Slavic Literatures — 1101 Norwood Avenue
John P. Jimenez (1965), M.D. (Medical College of Virginia)
Assistant Professor of Radiology — 1604 Woodburn Road
Frans F. Jöbsis (1964), Ph.D. (Michigan)
Associate Professor of Physiology — 1542 Hermitage Court
Frederick Charles Joerg (1947), M.B.A. (Harvard)
Professor of Business Administration — 2424 Wrightwood Avenue
Charles B. Johnson (1956), Ed.D. (Duke)
Associate Professor of Education — 2714 McDowell Street
Dale T. Johnson (1967), Ph.D. (Vanderbilt) — 108 Biltmore Garden Apartments
Assistant Professor of Psychiatry — Asheville, N. C.
Edward Anthony Johnson (1963), M.D. (Sheffield)
Professor of Physiology and Pharmacology — 1408 Shepherd Street
Joseph Johnson (1967), Ed.D. (Virginia)
Assistant Professor of Education — 3411 Mossdale
Terry Walter Johnson, Jr. (1954), Ph.D. (Michigan)
Professor of Botany — 2408 Prince Street
Irwin Johnsrude (1966), M.D. (Manitoba)
Assistant Professor of Radiology — 2702 Spencer Street
John Devereaux Johnston (1962), LL.B. (Duke)
Professor of Law — 2810 Chelsea Circle

W. Ross Johnston (1968), M.A. (Queensland)
Temporary Instructor in History — House G

William Webb Johnston (1963), M.D. (Duke)
Assistant Professor of Pathology — 1608 University Drive

William T. Joines (1966), Ph.D. (Duke)
Associate Professor of Electrical Engineering — 4010 Deepwood Circle

Wolfgang Karl Joklik (1968), Ph.D. (Oxford)
Professor of Microbiology and Immunology — 3613 Hathaway Road

Barney L. Jones (1956), B.D., Ph.D. (Duke)
Associate Professor of Religion — 2622 Pickett Road

Buford Jones (1962), Ph.D. (Harvard)
Associate Professor of English — 908 West Markham Avenue

Edward Ellsworth Jones (1953), Ph.D. (Harvard)
Professor of Psychology — 2738 Sevier Street

James David Jones (1963), M.D. (Duke)
Assistant Professor of Psychiatry and Associate in Pediatrics — 3851 Somerset Drive

*Oliver William Jones, Jr. (1963), M.D. (Oklahoma)
Associate Professor of Medicine and Associate Professor of Microbiology — 5408 Beaumont Drive

Jayant G. Joshi (1966), Ph.D. (India)
Assistant Professor of Biochemistry — 2003 Ward Street

Joan Elizabeth Kahle (1968), M.S. (Indiana)
Instructor in Physical Education — 1301 L Leon Street

Helen Louise Kaiser (1943), R.P.T. (Harvard)
Associate Professor of Physical Therapy — 1201 Dwire Place

William Arthur Kale (1952), B.D., D.D. (Duke)
Professor of Christian Education — 500 East Markham Avenue

William C. Kalke (1968), M.A. (Princeton)
Assistant Professor of Philosophy — 813 N. Buchanan Boulevard

Wesley Kart (1965), Ph.D. (Chicago)
Assistant Professor of Religion — 3514 Winding Way

Henry Kamin (1948), Ph.D. (Duke)
Professor of Biochemistry — 2417 Perkins Road

Julian Norman Kanfer (1968), Ph.D. (George Washington)
Associate Professor of Neurology in Department of Medicine and Associate Professor of Biochemistry — 2918 Friendship Road

Henry J. Katz (1967), M.A.T. (Duke)
Temporary Instructor in Mathematics — 1118 Woodburn Road

Samuel Lawrence Katz (1968), M.D. (Harvard)
Professor of Pediatrics — 2212 D Elba Street

William J. Katzenmeyer (1967), Ed.D. (Duke)
Associate Professor of Education — 1636 Marion Avenue

Bernard Kaufman (1968), Ph.D. (Indiana)
Associate Professor of Biochemistry — 2900 Arnold Road

Charles Rush Keith (1963), M.D. (Kansas University Medical School)
Assistant Professor of Psychiatry — Route 4, Box 47, Chapel Hill, N. C.

Edna Becker Kekich (1968), M.P.H. (North Carolina)
Instructor in Service Education in School of Nursing — Camelot F-5, Chapel Hill, N. C.

Thomas F. Keller (1959), Ph.D. (Michigan)
Professor of Business Administration — 1024 West Markham Avenue

*Through 10-30-68.

William Nimmons Kelley (1968), M.D. (Emory)
Assistant Professor of Medicine — 2740 Montgomery

Walter Kempner (1934), M.D. (Heidelberg)
Professor of Medicine — 1505 Virginia Avenue

Patrick Dan Kenan (1965), M.D. (Duke)
Assistant Professor of Otolaryngology — 804 Anderson Street

§Patricia Kennedy (1966), M.S. (Emory)
Instructor in Nursing — Valley Terrace Apts., 28-H

Van Leslie Kenyon, Jr. (1945), M.M.E. (Virginia) — Route 2
Professor of Mechanical Engineering — Hillsborough, N. C.

Grace Pardridge Kerby (1947), M.D. (Duke)
Professor of Medicine — 1108 Wells Street

Alan C. Kerckhoff (1958), Ph.D. (Wisconsin)
Professor of Sociology — 1511 Pinecrest Road

Robert B. Kerr (1965), Ph.D. (Johns Hopkins)
Professor of Electrical Engineering — 2220 Elmwood Avenue

Kaye H. Kilburn (1962), M.D. (Utah)
Associate Professor of Medicine — 3935 Hamstead Court

°Seuk Ky Kim (1963), M.D. (Severance, Korea)
Assistant Professor of Radiology — Apt. E-2, 1200 Leon Street

†Gregory Adams Kimble (1952), Ph.D. (Iowa State)
Professor of Psychology — 2513 Wrightwood Avenue

‡Earl C. Kindle (1967), Fil. Lic. (Stockholm) — Leesville Road
Adjunct Associate Professor of Forest Meteorology — Raleigh, N. C.

Burton B. King (1967), M.A. (Northwestern)
Associate in Surgery — 3404 Duke Homestead Road

James LeRoy King (1967), M.D. (Bowman Gray)
Assistant Professor of Anesthesiology — 1620 University Drive

Thomas DeArman Kinney (1960), M.D. (Duke)
R. J. Reynolds Tobacco Company Professor of Medical Education and Professor of Pathology — 3120 Devon Road

Marcel Kinsbourne (1967), M.D. (Christ Church)
Associate Professor of Pediatrics and Neurology and Lecturer in Psychology — 2528 Wrightwood Avenue

Warren Kirkendale (1967), Dr.phil. (Vienna)
Associate Professor of Musicology — 2422 Tryon Road

Norman Kirshner (1956), Ph.D. (Pennsylvania State)
Associate Professor of Biochemistry — 2524 Wrightwood Avenue

Joseph Weston Kitchen, Jr. (1962), Ph.D. (Harvard)
Associate Professor of Mathematics — 1600 Delaware Avenue

Gunter Klabes (1965), B.A. (Freiburg, Germany)
Temporary Instructor in German — 801 Underwood Avenue

Robert Frederick Klein (1963), M.D. (Alabama)
Assistant Professor of Medicine — 2740 Spencer Street

Gordon K. Klintworth (1964), Ph.D. (Witwatersrand, S. Africa)
Associate Professor of Pathology — 614 Starmont Drive

Peter H. Klopfer (1958), Ph.D. (Yale)
Professor of Zoology — Route 1, Box 293

°Through 4-30-68.
†Through 8-31-68.
‡Through 7-1-68.
§Through 8-31-68.

Conrad Merton Knight (1961), B.S. (Norwich)
Associate in Community Health Sciences and Associate in Radiology — 4603 Blanchard Road

Douglas Maitland Knight (1963), Ph.D. (Yale), Litt.D., LL.D., L.H.D.
Professor of English — 1508 Pinecrest Road

F. X. Calvin Knobeloch (1967), Ph.D. (Florida)
Associate in Speech Pathology and Audiology in Department of Surgery — 121 Larkspur Circle

Kenneth R. Knoerr (1961), Ph.D. (Yale)
Associate Professor of Forest Meteorology in School of Forestry and Associate Professor of Biometeorology in Department of Botany — 4429 Ryan Road

Yi-Hong Kong (1967), M.D. (National Defense Medical Center, Taipei, Taiwan)
Assistant Professor of Medicine — 3822 Hillgrand Drive

Allan Kornberg (1965), Ph.D. (Michigan)
Associate Professor of Political Science — 2511 Sevier Street

Wesley Kort (1965), Ph.D. (Chicago)
Assistant Professor of Religion — 3514 Winding Way

*Jack L. Kostyo (1959), Ph.D. (Cornell)
Professor of Physiology — 604 Starmont Drive

Helen T. Kotin (1967), M.D. (Colorado)
Associate in Community Health Sciences — Iris Lane, Chapel Hill, N. C.

Paul Jackson Kramer (1931), Ph.D. (Ohio State)
James B. Duke Professor of Botany — 2251 Cranford Drive

Richard B. Kramer (1968), Ph.D. (Chicago)
Assistant Professor of Psychology — Route 4, Roxboro, N. C.

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* Note missing pages. See duplicate file.

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°Through 9-30-68.
†Through 8-31-68.
‡Through 8-31-68.
§Through 8-31-68.
||Through 8-31-68.
°°Through 11-30-68.
††Through 6-30-68.
‡‡Through 6-30-68.

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*Through 1-31-69.
†Through 6-30-68.
‡Through 5-31-68.

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Frederick G. Sheppard, B.S.	Apartment 8
Civil Engineering	2007 House Avenue
Ida Harper Simpson, Ph.D.	604 Brookview Road
Sociology and Anthropology	Chapel Hill, N. C.
Joseph H. Somers, B.A.	
Chemistry	106 Woodridge Drive
Willard B. Stouffer, M.A.	
Political Science	1404 Duke University Road
Robert T. Stubbs, M.S.	Apartment H-9
Mathematics	3600 Tremont Drive
Robert W. Sussman, M.A.	
Sociology and Anthropology	911 Burch Avenue
Gene Waylon Talley, B.A.	53 Maxwell Road
Slavic Languages and Literatures	Chapel Hill, N. C.
Charles R. Taylor, B.S.	
Chemistry	3506 C Mordecai Street
Barbara Thompson, M.F.A.	
Art	Route 1, Box 17, Randolph Road
James R. Thompson, B.S.	
Physics	Route 7, Box 348

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Barbara P. Washburn, B.S. *Education*	Childs Mobile Home Court
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Theodore W. Weaver, III, M.A. *Botany*	3012 Dixon Road
Peter R. Weidner, B.S. *Mathematics*	Apartment G-4 1211 Ruffin Street
Peter Williams, M.A. *Sociology and Anthropology*	316 Morreene Road
Peter Wilson, A.B. *Philosophy*	404 Case Street

Research Associates

Kenneth L. Anderson, Ph.D. *Microbiology*	73 Willow Terrace Chapel Hill, N. C.
Carl Andrus, Ph.D. *Immunology*	51-D Colonial Apartments 3022 Chapel Hill Road
Luis Arqueros, Ph.D. *Biochemistry*	B-4 Westover Park Apartments 2312 Pratt Street
Helen Bashir, Ph.D. *Immunology*	Apartment 1 2007 House Avenue
Charles F. Beam, Ph.D. *Chemistry*	1707 Chapel Hill Road
Jan Bergeron, V.M.D. *Anatomy*	Elmdale Drive, Route 2 Chapel Hill, N. C.
Ingemar Bjork, M.D. *Biochemistry*	2412 Vesson Avenue Apartment 11
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Virginia S. Bryan, Ph.D. *Botany*	1108 Watts Street
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Francis Castellino, Ph.D. *Biochemistry*	12-A Colonial Apartments
Phillip L. Coggon, Ph.D. *Chemistry*	2732 Middleton Avenue Apartment 1-F
Michael Coughlan, Ph.D. *Biochemistry*	1914 Jersey Avenue Apartment 1
Sheila J. Counce, Ph.D. *Zoology*	3101 Camelot Court
Chicita F. Culberson, Ph.D. *Botany*	Route 7, George King Road

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Rule of Law Research Center	
Takehiko Deguchi, Ph.D.	864 Louise Circle
Physiology-Pharmacology	20-D Poplar Apartments
Alex de Hemptinne, M.D.	1106 Douglas Street
Physiology-Pharmacology	D-330 Bristol Court Apartments
Demosthenes Dialetic, Ph.D.	1803 House Avenue
Physics	Apartment 6-B
Mundrathi Divadeenam, Ph.D.	2415 Vesson Avenue
Physics	Apartment 2
Robert Ferris, Ph.D.	
Biochemistry	5-C Colonial Apartments
Wayne Fish, Ph.D.	
Biochemistry	2115 Sunset Avenue
Robert Fritz, Ph.D.	
Surgery	Route 4, Box 357
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B. F. Gisin, Ph.D.	Rockefeller University
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Rule of Law Research Center	2605 University Drive
Reed Hainsworth, Ph.D.	3600 Tremont Drive
Zoology	Apartment G-8
John W. Halderman, LL.B.	
Rule of Law Research Center	2216 Elmwood Avenue
Caroline Holloway, Ph.D.	Apartment H-2
Biochemistry	Morreene Manor
Claudius Jones, R.M.T.	
Obstetrics and Gynecology	2118 Summit Street
Vasudev C. Joshi, Ph.D.	
Biochemistry	Westover Park Apartments D-6
Varda Kahn, Ph.D.	
Physiology-Pharmacology	1506 Southwood Drive
Mogers Kampp, M.D.	
Physiology-Pharmacology	1320 Clarendon Street
Louise A. Kaufman, B.A.	
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Lieselotte Kemper	
Pathology	113 Newell Street
Gary Kirk, Ph.D.	
Physiology-Pharmacology	4155 Deepwood Circle
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Michael S. Korczynski, Jr., Ph.D.	Apartment 6-E
Microbiology	1600 Anderson Street
Hordur Kristinsson, Ph.D.	
Botany	28-B Colonial Apartments
Franz Kugler, Ph.D.	
Chemistry	1404 Duke University Road

Alfonso Langlois, Ph.D.	
Surgery	1720 Vista Street
David Lawlor, Ph.D.	
Botany	906 Buchanan Boulevard
Earl M. Levi, Ph.D.	1808 Chapel Hill Road
Chemistry	Apartment 3-C
Kenneth Mann, Ph.D.	
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Chung-ling Mao, Ph.D.	1803 House Avenue
Chemistry	Apartment 1-B
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Chemistry	Apartment 1
Patrick Mattock, Ph.D.	
Biochemistry	1507 W. Pettigrew Street
Calvin E. Moss, Ph.D.	
Physics	1910 Wallace Street
David Murrish, Ph.D.	1106 Douglas Street
Zoology	Bristol Court Apartments A-103
Dale K. Myers, Ph.D.	
Chemistry	Boyce Mill Road
Harry Ohanian, Ph.D.	Apartment 3
Immunology	2211 Morehead Avenue
Calillo Peracchia, M.D.	
Anatomy	38 DuPont Circle
Fred O. Purser, Ph.D.	
Physics	2309 Barrymore Avenue
Josef Riman, Ph.D.	Atlas Apartments
Surgery	2219 Arrington Street
Adolfo Ruarte, M.D.	2836 Chapel Hill Road
Physiology-Pharmacology	Valley Terrace Apartments 20-D
Eleanor R. Scheer, Ph.D.	
Microbiology	2009 Erwin Road
Horst Schulz, Ph.D.	918 Monmouth Avenue
Biochemistry	Apartment 4
Brian Sedgwick, Ph.D.	
Biochemistry	605 Jackson Street
Ilan Shif, Ph.D.	Apartment A-2
Microbiology	2724 Middleton Avenue
John J. Skehel, Ph.D.	26-C Colonial Apartment
Microbiology	3022 Chapel Hill Road
Bohdan Slavik, Ph.D.	
Botany	102 C Colonial Apartments
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Richard C. Turkington, LL.M. *Rule of Law Research Center*	2708 Legion Avenue
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Norimitsu Watabe, Ph.D. *Zoology*	942 Lambeth Circle
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Samuel Owen Cornwell, M.D.	N. C. State Board of Health
Assistant Clinical Professor of Pediatrics	Raleigh, N. C.
George W. Crane, M.D.	
Clinical Associate in Dermatology	3929 Bristol Road
Charles L. Curry, M.D.	
Clinical Associate in Medicine	Jerome Road
James E. Davis, M.D.	
Associate Clinical Professor of Surgery	7 Beverly Drive
Owen W. Doyle, M.D.	1013 Professional Village
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Eleanor B. Easley, M.D.	
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Assistant Clinical Professor of Endoscopy and Laryngology	3938 Dover Road
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Clinical Associate in Dermatology	Danville, Va.
Peter Gebel, M.D.	
Clinical Associate in Medicine	1032 Sycamore Street
John Glasson, M.D.	
Assistant Clinical Professor of Orthopaedics	615 Swift Avenue
Harvey E. Grode, M.D.	Wilson Clinic
Clinical Associate in Medicine	Wilson, N. C.
William F. Hollister, M.D.	Pinehurst Surgical Clinic
Assistant Clinical Professor of Surgery	Pinehurst, N. C.
Pedro J. Irigaray, M.D.	John Umstead Hospital
Assistant Clinical Professor of Psychiatry	Butner, N. C.
Charles Johnson, M.D.	
Clinical Associate in Medicine	1026 Jerome Road
Thomas T. Jones, M.D.	
Clinical Associate in Medicine	2621 Stuart Drive
Shankar N. Kapoor, M.D.	
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Kouns, John C., D.D.S.	Sourwood Drive
Clinical Associate in Dentistry	Chapel Hill, N. C.
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Clinical Associate in Medicine	Burlington, N. C.
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Clinical Professor of Parasitology	Chapel Hill, N. C.
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Samuel D. McPherson, Jr., M.D. *Clinical Associate in Ophthalmology*	29 Oak Drive
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Hans G. Noller, M.D. *Associate Clinical Professor of Pediatrics*	Corning Electronics Raleigh, N. C.
Carl N. Patterson, M.D. *Assistant Clinical Professor of Otolaryngology*	3930 Plymouth Road
Henry T. Perkins, M.D. *Clinical Associate in Medicine*	615 St. Mary's Street Raleigh, N. C.
Thaddeus H. Pope, Jr., M.D. *Clinical Associate in Otolaryngology*	220 Forestwood Drive
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A. Douglas Rice, M.D. *Clinical Associate in the Department of Pediatrics*	4020 Nottaway Road
Louis C. Roberts, M.D. *Assistant Clinical Professor of Urology in Department of Surgery*	3950 Plymouth Road
H. Max Schiebel, M.D. *Assistant Clinical Professor of Surgery*	3816 Pickett Road
Nathan Schupper, D.D.S. *Clinical Associate in Dentistry*	2802 Welcome Drive
Stewart M. Scott, M.D. *Assistant Clinical Professor of Surgery*	1 Northwood Road Asheville, N. C.
Dorothy Shearin, M.D. *Assistant Clinical Professor of Pediatrics*	Murdoch Center Butner, N. C.
William V. Singletary, M.D. *Clinical Associate in Medicine*	32 Beverly Drive
Allen D. Smith, M.D. *Clinical Associate in Dermatology*	4022 Bristol Road
E. Wilson Staub, M.D. *Clinical Associate in Surgery*	Pinehurst Surgical Clinic Pinehurst, N. C.
Charles Woodrow Styron, M.D. *Assistant Clinical Professor of Medicine*	615 St. Mary's Street Raleigh, N. C.
Timothy Takaro, M.D. *Associate Clinical Professor of Surgery* *Chief, Cardiovascular Surgical Section*	VA Hospital, Oteen, N. C.
H. Mac Vandiviere, M.D. *Assistant Clinical Professor of Community Health Sciences*	Gravely Sanatorium Chapel Hill, N. C.
George A. Watson, Jr., M.D. *Clinical Associate in Pediatrics*	4023 Bristol Road
Bailey Daniel Webb, M.D. *Assistant Clinical Professor of Pediatrics*	14 Alastair Court Apartments

David G. Welton, M.D. — 1012 S. King's Drive
Clinical Associate in Dermatology — Charlotte, N. C.
Arthur Albert Wykes, Ph.D. — 505 Dartmouth Road
Associate Clinical Professor of Pharmacology — Raleigh, N. C.
Robert Foster Young, M.D. — Halifax County Health Department
Assistant Clinical Professor of Community Health Sciences — Halifax, N. C.

Educational Administration

*Barnes Woodhall, M.D.
Chancellor pro tem — 4006 Dover Road
†Marcus E. Hobbs, Ph.D.
Provost — 115 Pinecrest Road
‡William G. Anylan, M.D.
Vice President for Health Affairs — 1516 Pinecrest Road
§Frank T. de Vyver, Ph.D.
Vice Provost — 8 Sylvan Road
Harold W. Lewis, Ph.D.
Vice Provost and Dean of the Faculty — 1708 Woodburn Road
||John C. McKinney, Ph.D.
Vice Provost and Dean of the Graduate School — 1627 Marion Avenue
**James L. Price, Ph.D.
Vice Provost and Dean of Undergraduate Education — 2723 Circle Drive
Craufurd D. Goodwin, Ph.D.
Vice Provost and Director of International Programs — 2256 Cranford Road
Fred C. Joerg, M.B.A.
Assistant Provost for Academic Administration — 2424 Wrightwood Avenue
William J. Griffith, A.B.
Assistant Provost and Dean of Student Affairs — 2518 Wrightwood Avenue
††Hugh M. Hall, Jr., Ph.D.
Assistant Provost and Dean of Trinity College — 2413 Wrightwood Avenue
Robert Boyd Cox, A.M.
Associate Dean of Trinity College — 2319 Club Boulevard
Richard L. Cox, B.D.
Dean of Undergraduate Men
Peter F. Carbone, Jr., Ed.D.
Assistant Dean of Trinity College — 111 Brenrose Circle
Alan W. Jenks, Th.D.
Assistant Dean of Trinity College — 1025 Dacian Avenue
Gerald Lee Wilson, B.D.
Assistant Dean of Trinity College
‡‡*Supervisor of Men's Residences and Acting Dean of Undergraduate Men* — 2941 Friendship Road

*Associate Provost through 1-15-69; Barnes Woodhall appointed Special Assistant to the President until 3-7-69 when elected Chancellor pro tem.

†R. Taylor Cole, Ph.D., Provost through 1-15-69.

‡Associate Provost through 6-30-69; elected Vice President for Health Affairs 5-31-69.

§Retired from Administration 7-31-69.

||Richard L. Predmore, D.M.L., retired from Administration 7-31-69.

**Dean of Trinity College through 6-30-69.

††Associate Dean of Trinity College and Dean of Freshman through 6-30-69.

‡‡Through 7-31-69.

Juanita Kreps, Ph.D.	
Dean of The Woman's College and Assistant Provost	1407 Pettigrew St.
ane Philpott, Ph.D.	
Dean of Undergraduate Instruction, The Woman's College	2260 Cranford Road
nnie Leigh Broughton, M.A.	
Assistant Dean of Undergraduate Instruction, The Woman's College	1111 Roosevelt Street Chapel Hill, N. C.
Virginia S. Bryan, Ph.D.	
Assistant Dean of The Woman's College	1108 Watts Street
ary Grace Wilson, A.M.	
Dean of Undergraduate Women, The Woman's College	Faculty Apartments
illian Armfield Lee, M.S.Ed.	
Assistant Dean of Undergraduate Women, The Woman's College	25 Alastair Court
obert Earl Cushman, B.D., Ph.D.	
Dean of the Divinity School	2719 Spencer Court
Donald J. Welch, B.D.	
Assistant Dean for Admissions	2715 Augusta Drive
D. Kelly Ingram, B.D.	
Dean of Students, Divinity School	2728 Sevier Street
elen Mildred Kendall, A.B.	
Administrative Assistant and Secretary to the Faculty, Divinity School	1013 Dacian Avenue
George Pearsall, Sc.D.	
Acting Dean of the School of Engineering	2941 Welcome Drive
dward Kready Kraybill, Ph.D.	
Associate Dean for Undergraduate Study, School of Engineering	2726 Circle Drive
*Charles W. Ralston, Ph.D.	
Dean of the School of Forestry	2531 Wrightwood Drive
avid V. Martin, Ed.D.	
Associate Dean of the Graduate School	2312 Wilson Street
ale B. Randall, Ph.D.	
Assistant Dean of the Graduate School	2620 University Drive
Kenneth Pye, L.L.M.	
Dean of the School of Law	G-5, 1200 Leon Street
ank Thompson Read	
Assistant Dean of the School of Law	2340 Anthony Drive

*Margaret Ball retired from Administration 1-31-69; Jane Philpott Acting Dean The Woman's College 2-1-69 through 6-30-69.

†Appointed Acting Dean of Undergraduate Instruction 2-1-69; Josefina C. ryakian appointed Acting Assistant Dean of Undergraduate Instruction 2-1-69; appointed Assistant Dean of The Woman's College 7-1-69.

‡Through 6-30-69.

§Retired from Administration 6-30-69.

||James Lathrop Meriam, Ph.D., retired from Administration 7-31-69.

**Acting Dean of the School of Forestry 9-1-68 through 3-31-69.

*Thomas D. Kinney *Director of Medical Education*	1516 Pinecrest Roa
Ernest Croft Long, Ph.D. *Associate Director for Undergraduate Medical Education*	Box 204-B, Route 1
Stuart M. Sessoms, M.D. *Director of Duke Hospital and Associate Dean for Clinical Sciences*	2750 McDowell Stree
Morton D. Bogdonoff, M.D. *Assistant Director for Graduate Medical Education*	2425 Wrightwood Driv
Jane G. Elchlepp, M.D., Ph.D. *Assistant Dean for Planning in Medical Center*	Box 258A, Route 1
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Helen T. Kotin, M.D. *Assistant to the Vice President—Research Coordination*	Iris Lan Chapel Hill, N. C
Suydan Osterhout, Ph.D. *Associate Director for Admissions, School of Medicine*	600 Starmont Driv
S. Douglas Smith, B.S. M.H.A. *Assistant Director of Duke Hospital*	909 Clarendon Stree
Charles H. Frenzel, A.B. *Administrative Director, Medical Center*	3950 Bristol Roa
Myrtle Irene Brown, R.N., Ph.D. *Dean of the School of Nursing*	3103 Buckingham Roa
Ella E. Shore, M.A. *Dean of Student Affairs, School of Nursing*	701 Louise Circl
Clark R. Cahow, Ph.D. *University Registrar*	1106 Watts Stree
Henry C. Johnson, B.S. *Assistant Registrar*	1304 Kent Stree
Margaret L. Coleman, A.M. *Recorder, School of Medicine*	918 Urban Avenu
†Mae Braswell Harris, M.R.E. *Recorder Graduate and Professional Schools*	5B Colonial Apartment
Elizabeth S. Malone, A.B. *Acting Recorder, Graduate and Professional Schools*	3310H Glasson Stree
Dorothy Holt McElduff, A.B. *Recorder, School of Engineering*	100 Forestwood Driv
Louise Seabolt, A.M. *Recorder*	12 Alastair Court Apartment
Cliff W. Wing, Jr., Ph.D. *Director of Student Resources*	2722 Spencer Stree
Robert H. Ballantyne, Ed.D. *Director of Undergraduate Admissions*	2510 Wrightwood Avenu
Robert T. Simpson, M.Ed. *Assistant to Director of Undergraduate Admissions*	
Everett Broadus Weatherspoon, A.B. *Director of Undergraduate Financial Aid*	125 Pinecrest Roa

*Effective 9-1-69.
†Leave of absence academic year 1968-69.

Elizabeth Anderson Persons, A.M. *Director of Admissions, The Woman's College*	612 Swift Avenue
Howard M. Phillips, M.A. *Admissions Counselor*	2011 James Street
Susan L. Persons, A.B. *Assistant to the Director*	Colonial Apartments
Henry Weitz, Ed.D. *Director of the University Counseling Center*	2716 Circle Drive
John D. Costlow, Ph.D. *Director of the Duke Marine Laboratory*	201 Ann Street Beaufort, N. C.
F. John Vernberg, Ph.D. *Assistant Director, Duke Marine Laboratory*	Duke Marine Laboratory Beaufort, N. C.
Olan Lee Petty, Ph.D. *Director of the Summer Session*	2605 McDowell Street
James T. Cleland, Th.D., D.D. *Dean of the Chapel*	2117 Campus Drive
James Henry Phillips, Ph.D. *University Marshal*	2517 Perkins Road

Business Administration

Charles B. Huestis *Vice President for Business and Finance*	1803 Woodburn Road
Gerhard Chester Henricksen, M.A., C.P.A. *Vice President and Treasurer*	3629 Westover Road
Edwin Constant Bryson, LL.B. *University Counsel*	818 Anderson Street
James L. Adams, M.B.A. *Director of Material Support*	111 Foxcroft Lane
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James A. Ward, A.B. *University Architect*	Route 8, Goodwin Road
William Kenneth Howard, B.S. *Chief Plant Engineer*	106 Pinecrest Road
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Henry Speck Morgan, A.B. *Bursar*	2705 Brighton Road
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Riley T. Smith *Supervisor, Tabulating Department*	2523 Wilson Street
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Ben F. Weaver, M.B.A. *Coordinator of Sponsored Programs*	132 Larkspur Circle
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Undergraduate Instruction

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General Information

The University

Duke, a privately supported, church-related (Methodist) university, has about 8,000 students enrolled in nine schools and colleges. The students annually represent nearly every state and sixty-five foreign countries. There are now more than 45,000 alumni in seventy nations. The University is a member of the Southern Association of Colleges and Schools, and of the Association of American Universities, which consists of forty-one outstanding institutions.

The Undergraduate Colleges

Trinity College

Trinity College is responsible for the academic and social affairs of Duke undergraduate men in the arts and sciences. Its program is built around the development of a challenging, liberal curriculum, of honors work for able students, and effective academic counseling services. Cultural-intellectual cocurricular programs and a residential program combining faculty association with self-government are also a part of Trinity. While Trinity shares the Faculty of Arts and Sciences with The Woman's

College and the Graduate School, twenty faculty members serve as Fellows of the College.

The Woman's College

The Woman's College combines the benefits of a small residential liberal arts college with those of a major university. As members of the residential College, students govern themselves and live within a twelve-unit house system on a well-defined portion of the larger campus. The residents of each house represent all four college classes, diverse geographical origins, and varying skills and intellectual interests. Many classes and most of the College activities center on The Woman's College (East) Campus; but women students share in a wide variety of academic, cultural, and social activities on the West (Men's) Campus. A shuttle bus between campuses assures accessibility to all points.

School of Engineering

The undergraduate program is designed to provide the opportunity for students to prepare for successful practice of the profession, for continuing personal cultural development, and for satisfying and responsible citizenship. Curricula are soundly based upon mathematics and the physical sciences; yet the engineering student also selects a number of courses in the liberal arts and is a member of a community with a liberal arts tradition. As a matter of policy, the School is relatively small, with an undergraduate enrollment of about 450. The undergraduate program receives the benefits of association with a strong graduate engineering program of instruction and research.

School of Nursing

The program of undergraduate study in nursing offers an opportunity for selected high school graduates to earn the professional degree Bachelor of Science in Nursing. The objectives of the curriculum are: (1) to provide opportunities for gaining the basic knowledge, skills, and attitudes of the developing professional nurse; (2) to provide the foundations for continuing learning and study; and (3) to provide students with information which can equip them to function both as nurses and as citizens in a changing society. As a part of the University community, the School of Nursing serves its students as the focus of a total educational experience that only a major university can provide.

The Objective of a Liberal Education

Woodrow Wilson described the objective of a liberal education as "the wholly awakened man." Though the four years in college may not

seem long enough to achieve this noble ideal, at the least they prepare one for the life-long awakening. A bachelor's degree is not an end, it is a beginning. Graduation, from the Latin word *gradum,* step, marks one more stride along the way.

The idea of a liberal education, like all great ideas, eludes precise definition, but in every age men have tried to express this abstraction by describing its results. They have always fallen short, because any definition is a system of limitations. For example, a nineteenth-century master at Eton told his students:

> You go to a great school not so much for knowledge as for arts and habits; for the habit of attention, for the art of expression, for the art of assuming at a moment's notice a new intellectual position, for the art of entering quickly into another person's thoughts, for the habit of submitting to censure and refutation, for the art of indicating assent or dissent in graduated terms, for the habit of regarding minute points of accuracy, for the art of working out what is possible in a given time, for taste, for discrimination, for mental courage and mental soberness.
>
> —William Johnson Cory

This is helpful, but the questing student will surely wish for something further, something even more explicit about the abilities, attitudes, and customs essential to a liberal education.

At Duke University, as at every school dedicated to the liberal tradition, it is the faculty that must, in the final analysis, determine the specific content of the four-year curriculum offered for those who pursue a liberal education. And in constructing that curriculum, the faculty have taken into account these aims:

First, an educated man will acquire at least some experience in the three divisions of human knowledge and inquiry:

> the world of nature—the physical and life sciences;
> the world of man in relation to man—the social sciences;
> the world of spirit and imagination—the humanities.

The objective is a man capable of thinking in the markedly different ways represented by these three divisions; for each of them he will familiarize himself with the appropriate method and idiom as well as the particular purpose and scope.

Second, an educated man will concentrate in one discipline to enjoy the returns to be derived from intensive and specialized work.

Third, an educated man will learn to read his native language with ease and accuracy; what is more, he should develop a life-long desire to read avidly and with discernment.

Fourth, an educated man will master his native language with sufficient skill to write it with vigor and precision.

Fifth, an educated man will read, write, and speak competently at least one foreign language. Apart from any utilitarian purpose it may serve, this objective leads to an understanding of a foreign culture and at the same time affords a fresh awareness of one's own tongue and society.

And finally, a liberally educated man will acquire historical, artistic, philosophical, and spiritual perspective. An exposure to the deeds and dreams of great minds in the unending struggle to reconcile power and principle, an awareness of the ways in which men have defined beauty, a knowledge of the best in ancient thought, and an appreciation of the values men have found in the Judaeo-Christian heritage must instill a contempt for the meretricious and the second-rate.

In short, a liberal education should help a man to know, to understand, to decide, and to express: to know the facts or how to find them, to understand those facts with insight and perspective, to decide only after understanding and conscious evaluation, and to express those decisions with ease and grace. These are not the sum of a liberal education, but they go far to assist the wholly awakened man in his unceasing quest to live with dignity and sensitivity in our complex world and to participate in the values and common purposes that infuse our civilization.



Courses of Study and Requirements for Degrees

Within the framework of the four-year curricula offered in the undergraduate colleges of Duke University, the student has the major responsibility for devising and carrying through a course program appropriate to his goals and background. He will be assisted in this task by departmental Directors of Undergraduate Studies, Supervisors of Freshmen Instruction, Faculty Advisers, and by an academic dean of his college.

Duke University offers in Trinity College and The Woman's College, courses of study which lead to the degrees of Bachelor of Arts and Bachelor of Science; and in the School of Engineering, the degree of Bachelor of Science in Engineering.

Trinity College and The Woman's College

General Program

The General Program is designed for the student whose primary interest is in one of the liberal arts subjects. The subjects in which major work is offered are accounting, anthropology, art, botany, business administration, chemistry, economics, elementary education, English, French, geology, German, Greek, history, Latin, mathematics, music,

philosophy, physical education for women, physics, political science, psychology, religion, Russian, sociology, Spanish, and zoology.

Entering freshmen are referred to *Program I* and *Program II* of a new curriculum as outlined in *Information for Prospective Students, 1968* and *Academic Guide for Freshmen, 1969*.

Bachelor of Arts

The requirements for the degree of Bachelor of Arts are based on the principle that the student will derive the maximum benefit from his college work if his program includes a broad distribution of studies among representative fields of culture and a concentration within a special area.

For graduation with the degree of Bachelor of Arts, the following course work, or equivalent, must be completed in accordance with the academic regulations as stated in this *Bulletin*. One or more of the requirements may be met through the Advanced Placement Program.

Uniform Course Requirements	*s.h.*
English	6
Foreign Language	6–18
Natural Science	8
Formal Science	3
Religion	6
Social Science and History	12
Humanities	12
Physical Education	4
Major and Related Work	42
Electives to Make a Total of	124

These requirements are described in detail below.

English. 6 s.h. This requirement is met by the completion of English 1-2.

Foreign Language. The languages which meet this requirement are French, German, Greek, Italian, Latin, Russian, and Spanish. This requirement is fulfilled by one of the following: (1) a passing grade in French 64, German 91 and 92 or equivalent, Greek 106 or 108, Italian 64, Latin 64, Russian 64 or Spanish 64; (2) a satisfactory score on the C.E.E.B. Achievement Test or on the placement test given at Duke, plus a validating year (two literature courses numbered 90 or above); and (3) passing a proficiency examination. (The proficiency examination can be taken only by students who have been enrolled in language work in the University and is not available to entering Freshmen.) Students presenting for entrance four units of Latin may satisfy the language requirements by the completion of two years of Greek.

Natural Science. 8 s.h. To satisfy this requirement a student must

complete a laboratory course in one of the natural sciences (biology, chemistry, geology, or physics).

Formal Science. 3 s.h. One course of at least 3 semester hours selected from mathematics (except Mathematics 51) and logic (Philosophy 48).

Religion. 6 s.h. This requirement may be met in one of the following ways: (1) by completing, in the freshman year, Religion 1-2; (2) by completing, in the sophomore year or later, Religion 51-52; or (3) by completing, in the sophomore year or later, Religion 55 and one other course selected from those numbered 60-99; or (4) by completing Religion 105, followed by 111, 121, 123, 152, or 175.

Social Science and History. 12 s.h. To satisfy this requirement a student must complete 12 semester hours, with six hours in each of two departments, from the following basic courses: Economics 1-2 or 51-52, 132, 149, 150, 154; History 1-2 or 51-52; Political Science 11 or 61 to be followed by any political science course with a 100 number; Psychology 91, to be followed by either Psychology 100 or 101; or Sociology 91 to be followed by any sociology course numbered below 190 or Anthropology 93-94. (Double-numbered courses separated by a hyphen do not meet this requirement unless both courses are completed.)

Humanities. 12 s.h. To satisfy this requirement a student must complete 12 semester hours from the following courses, with six hours in each of two divisions: (Double–numbered courses separated by a hyphen do not meet this requirement unless both courses are completed.)

1. Literature: English 55-56, 57-58, 111-112, 125-126, 131-132, 137-138, 143-144, or any two consecutive courses in the series 173-176; Classical Studies 111-112, 121-122; all foreign language literature courses above 100 not given in translation.
2. Philosophy 41, 42, 93, 94, 101, 109, 110, 111, 117, 119, 121, 122.
3. Art and Music: Art 51-52; Music 1-2, 51-52, 125, followed by 134, 139, 163, 164 or 165; Classical Studies 141-142.

Physical Education. 4 s.h. Physical education is required during each of the first two years and is normally completed by the end of the sophomore year.

Major and Related Work. 42 s.h. The major work consists of 18 to 24 semester hours in one department above the introductory courses. Introductory courses consist of two one-semester courses in all departments except the departments of Economics, Classical Studies, Germananic Languages and Literature, Music, and Romance Languages, where they may consist of three to six one-semester courses. The choice of courses must be approved by the major department. Whenever the department defines the major as 24 hours above the introductory courses, the student, with the prior approval of the Director of Undergraduate Studies, may substitute 6 hours of advanced work normally taken by a major in a related discipline during his junior or senior year. Eighteen hours of

related work must be taken in two or more other departments and is selected subject to the approval of the major department and academic dean of the appropriate college; it may not include more than one course of 6 or 8 semester hours open primarily to freshmen. With the consent of the department, however, majors in mathematics, the natural sciences, and science education may include as related work introductory courses in mathematics and the natural sciences. Although courses satisfying the uniform course requirements may also be counted toward the requirements in major and related work, no student may satisfy two uniform course requirements with the same course.

Electives. In addition to the uniform courses required and the major and related work, other courses must be completed to make a total of at least 124 semester hours.

Students whose courses of study permit may elect a maximum of 18 semester hours in engineering, forestry, or medical science. The courses elected in these subjects must be approved by the major department and the dean of the appropriate college.

Bachelor of Science

For graduation with the degree of Bachelor of Science, the following course work, or equivalent, must be completed in accordance with the academic regulations as stated in this *Bulletin.* One or more of the requirements may be met through the Advanced Placement Program.

Uniform Course Requirements	*s.h.*
English	6
Foreign Language	8–24
Mathematics	6
Natural Science	8
Social Science and History	6
Religion	6
Humanities	6
Physical Education	4
Major and Related Work	48
Electives to Make a Total of	124

These requirements are described below.

English. 6 s.h. This requirement is met by the completion of English 1-2.

Foreign Language. Bachelor of Science candidates must complete the second college year, or equivalent as determined by examination, of one foreign language, and the first college year of another. For each departmental major, see a listing of the foreign languages acceptable for the B.S. degree.

Mathematics. 6 s.h. This requirement may be met by completion of Mathematics 21 and 22.

Natural Science. 8 s.h. This requirement can be satisfied by courses in one of the natural sciences, namely, biology, chemistry, geology, or physics. The courses must include laboratory work.

Social Sciences and History. 6 s.h. This requirement can be satisfied by the following: Economics 51-52, 132, 149, 150, 154; History 1-2 or 51-52; Political Science 11 or 61 to be followed by any political science course with a 100 number; Psychology 91, to be followed by either Psychology 100 or 101; Sociology 91 to be followed by any Sociology course numbered below 190 or Anthropology 93-94. (Double-numbered courses separated by a hyphen do not meet this requirement unless both courses are completed.)

Religion. 6 s.h. This requirement may be met in one of the following ways: (1) by completing, in the freshman year, Religion 1-2; (2) by completing, in the sophomore year or later, Religion 51-52; (3) by completing, in the sophomore year or later, Religion 55 and one other course selected from those numbered 60-99; and (4) by completing Religion 105, followed by 111, 121, 123, 152 or 175.

Humanities. 6 s.h. This requirement can be satisfied by 6 hours from the following: English 55-56, 57-58, 111-112, 125-126, 131-132, 137-138, 143-144; Classical Studies 111, 112, 121, 122; all foreign languages literature courses above 100 not given in translation; Philosophy 41, 42, 93, 94, 101, 109, 110, 111, 117, 119, 121, 122; Art 51-52; Music, 1-2, 51-52, 125, followed by 134, 139, 163, 164 or 165; Classical Studies 141, 142. (Double-numbered courses separated by a hyphen do not meet this requirement unless both courses are completed.)

Physical Education. 4 s.h. Physical education is required during each of the first two years and is normally completed by the end of the sophomore year.

Major and Related Work. 48 s.h. Major and related work consists of at least 48 semester hours in the natural sciences. This work must be selected from the departments of botany, chemistry, geology, mathematics, physics, psychology, and zoology. The major work consists of a minimum of 18 semester hours in one department above the introductory courses. The choice of courses is subject to the approval of the department. Whenever the department defines the major as 24 hours or more above the introductory courses, the student, with the prior approval of the Director of Undergraduate Studies, may substitute 6 hours of advanced work normally taken by a major in a related discipline during his junior or senior year. The related work is taken in at least two other departments and is selected subject to the approval of the major department. With the consent of the department, majors in mathematics and the natural sciences may include as related work introductory courses in mathematics, the natural sciences, and science education. A minimum of 14 semester hours of related work is required, 8 hours of which must be in laboratory science. Although courses fulfilling the uniform course requirements may also be counted

toward the requirements in major and related work, no student may satisfy two uniform course requirements with the same course. For the major in science education leading to the B.S. degree, see p. 13.

Electives. In addition to the above, the student must elect a sufficient number of courses to complete the 124 semester hours necessary for graduation.

Students whose courses of study permit may elect a maximum of 18 semester hours in engineering, forestry, or medical science. The courses elected in these subjects must be approved by the major department and the dean of the appropriate college.

Specialized Programs

A student who has chosen a particular field may wish to take more course work in a major or related discipline than is required by his major department. The following programs of study offer a guide in planning this work, especially as it applies to preparation for various professions or professional schools.

Undergraduate Programs

Accounting. A student may specialize in public or industrial accounting in his junior and senior years. In either case the following courses should be taken in the freshman and sophomore years:

Freshman Year

Mathematics 17 or 21 (preferably Mathematics 21), Economics 1

Sophomore Year

Economics 51 (if Economics 1 not taken in freshman year) and Economics 52. Bus. Adm. 59, 101, and 138.

Public Accounting. The following sequence of courses includes more than the requirement for a major in accounting. It is, however, a suggested list of courses which meet the current requirements of the North Carolina Board of Certified Public Accountants.

Junior Year

Bus. Adm. 143—Corporation Finace
Bus. Adm. 171—Accounting Theory
Bus. Adm. 172—Corporate Accounts
Bus. Adm. 181—Business Law

Senior Year

Bus. Adm. 173—Auditing Theory and Practice

Bus. Adm. 177—Income Tax Accounting
Bus. Adm. 275—Advanced Industrial Accounting and Management
Bus. Adm. 295—Advanced Accounting Seminar

Election of one of the following: (either year)

Bus. Adm. 149—Marketing
Bus. Adm. 184—Commercial Law for Accountants
Bus. Adm. 185—Business Administrative Organization
Bus. Adm. 296—Advanced Accounting Seminar

Industrial Accounting. The following courses are suggested:

Junior Year

Bus. Adm. 143—Corporation Finance
Bus. Adm. 171—Accounting Theory
Bus. Adm. 172—Corporate Accounts
Bus. Adm. 177—Income Tax Accounting

Senior Year

Bus. Adm. 173—Auditing, Theory and Practice
Bus. Adm. 177—Income Tax Accounting
Bus. Adm. 275—Advanced Industrial Accounting and Management
Bus. Adm. 279—Budgeting and Control
Bus. Adm. 291—Business Policy

Biology—Interdisciplinary Programs. Modern biology meets and joins forces with many related fields. Examples of such interdisciplinary areas are: biomathematics, microbiology, molecular biology, oceanography, and psychobiology. Proper training for these and other areas may require work in two or several science disciplines to such depth that requirements for a conventional uni-departmental major program cannot be met in the allotted time. Any undergraduate who contemplates undertaking a graduate program in an interdisciplinary area involving biology should consult with the directors of undergraduate study of the fields concerned. They may, by joint consent, approve of major-related programs which differ from those concerned primarily with a single discipline. An interdisciplinary major student shall be considered a major in the department of his choice and be under the supervision of the Director of Undergraduate Studies of that department. Interdisciplinary programs must be planned early in the undergraduate career, preferably starting with the freshman year.

Business. A specialized program is offered to students planning to enter business. A student electing this program must take, in addition to the uniform course requirements, the following courses in the sequence indicated.

Freshman Year

Mathematics 21 and Economics 1

Sophomore Year

Economics 51 (if Economics 1 not taken in Freshman year) and Economics 52
Business Administration 59, 101, and 138

Junior and Senior Years

At least four from the following list:
Bus. Adm. 143—Corporation Finance
Bus. Adm. 147—Production Management
Bus. Adm. 149—Marketing
Bus. Adm. 171—Accounting Theory
Bus. Adm. 185—Business Administration Organization
Bus. Adm. 189—Introduction to Decision Theory
Bus. Adm. 190—Quantitative Methods in Business
Bus. Adm. 291—Business Policy

Music Education. The following course sequence is designed for prospective teachers of high school instrumental or vocal music. Although it includes more than the number of hours required for a major in music, it represents those courses recommended by the Music Department for state certification: Music 51-52, 65-66, 115-116, 121-122, 147-148, 3 additional semester hours in Music Literature, and 18 semester hours in Applied Music.

Other areas of concentration in music are described in the course listings under music in this *Bulletin.*

Teaching. Duke University is accredited by the National Council for Accreditation of Teacher Education for the preparation of elementary and secondary school teachers. The University's programs are also approved by the North Carolina Department of Public Instruction.

The program for students who intend to teach is designed to prepare for positions either in elementary or secondary schools. All prospective teachers must take Psychology 91, preferably during the sophomore year and Education 100 or 113, preferably during the junior year. Only students with an average of 2.0 overall and in their major or teaching fields will be admitted to student teaching. Special methods courses should be taken prior to undergraduate student teaching, which may be done *only* in the senior year.

Whatever their majors, students should consult an appropriate member of the Department of Education prior to each registration period to assure their meeting the certification requirements of the states in which they wish to teach and having places reserved for them in student teaching.

Elementary-School Teaching. Students preparing to teach in the elementary school must complete the following specific requirements in addition to Psychology 91 and Education 100 or 113: Education 101, 102, 105, 106, 107, 108, 118, and 161; Art 51-52; Economics 115 or 120; Health Education 134; History 91, 92; Mathematics 17 or 21; Music 151, 152; Physical Education 102; Political Science 61; and a biological science, 3 s.h. (Biology 1-2 will satisfy this requirement and minimum uniform requirements in natural science as well. Other courses listed above also may meet certain of the other minimum uniform requirements.) Students preparing to teach in the elementary school also must develop a nine to twenty-one semester-hour field of concentration in addition to the foregoing requirements.

Secondary-School Teaching. Students preparing to teach in a secondary school may meet certification requirements by qualifying in one teaching field. Prospective secondary-school tearchers must major in a subject other than education. Qualification for certification to teach a single science may be sought under either the A.B. or the B.S. degree. Students desiring to major in Science Education should read carefully the description of that program given below.

Science Education Major. Students who intend to teach sciences in the high school may major in Science Education. The program is designed to meet certification requirements and to provide the broad background of preparation in the sciences which is needed by science teachers. Students planning to enter this program should consult an adviser in the Department of Education and in one of the science departments. The basic requirements are: Education 100, or 113, 118, 215, 216, and 276 or 246; Mathematics 21 and 22; Sciences (botany, chemistry, geology, physics, zoology, and mathematics courses numbered above 22), 42 s.h., of which 15 must be above introductory level and must include one year's study in laboratory courses in three of the following: botany or zoology, chemistry, physics, and geology.

The same major program may be followed for both the B.S. and B.A. degrees.

Preparation for Graduate and Professional Schools

Many graduate and professional schools require special tests for students seeking admission. Information regarding the test requirements should be obtained from the catalogue of the schools to which the student plans to apply. The University Counseling Service has available applications for required graduate and professional testing programs.

Graduate School. The student who plans to enter a graduate school of arts and sciences for advanced study should consult an adviser in the field of the proposed advanced study concerning suitable preparation. Most graduate schools have definite requirements in foreign languages

for all students. Candidates for the degree of Doctor of Philosophy are required to pass reading examinations, usually in German and French. In some cases other languages may be substituted. As soon as practicable, the student should ascertain the requirements of the particular graduate school he desires to enter.

Graduate School of Business Administration. Students seeking advice concerning preparation for entrance to a graduate school of business administration may consult the Department of Business Administration. Many graduate programs in business administration are designed specifically for students with little or no undergraduate work in business.

Some schools require at least one year of calculus for admission. Additional mathematics can be very helpful, especially linear algebra, probability, statistics, and additional calculus. Other areas in which work can be of special value are: philosophy of science and formal logic; one or more of behavioral sciences, economics, and the physical sciences and engineering.

Medical and Dental Schools. Students planning to enter a medical or dental school should arrange their programs of study from the first semester so as to include those courses required by the professional schools of their choice. These courses usually include two years of English, two years of chemistry, and one year each of biology, mathematics, and physics. At Duke University the courses normally taken are English 1-2 and 55-56 or 57-58, Chemistry 1, 2, 61, 151, and 152, Biology 1 and 2, Mathematics 21-22, and Physics 51-52. Most professional schools require ninety semester hours of college credit before consideration for admission. Because individual medical and dental schools strongly recommend or, in some cases require specific courses in addition to those listed above, it is wise for the student to be fully aware of any additional requirements established by the professional school of his choice.

The minimum uniform course requirements and those of the major and its related work for either the A.B. or B.S. degree must be fulfilled for graduation. The latter requirements are described for each department under Courses of Instruction in this *Bulletin*. Each student may elect to major in the department of his choice, but should understand that even with careful program planning starting his first semester, it may be necessary to exceed the 124 semester hours required for graduation.

Law Schools. Students who plan to prepare for law school may select their major work in any field. They have often chosen the following courses:

Business Administration 57, 58.
Economics 51, 52.
English 55, 56.
History 1, 2 or 51, 52, 105, 106.
Philosophy 48 and 41.
Political Science 61.
Sociology 91, 92.

For a fuller discussion of undergraduate preparation for the study of law, refer to the Duke University Announcement, *Studying Law at Duke*, obtainable at the Law School.

Theological Schools and Religious Work

The Divinity School of Duke University publishes as its own the official policy statement of the American Association of Theological Schools respecting undergraduate preparation for students expecting to enroll in graduate professional theological studies.

"The student contemplating theological study should correspond at the very earliest opportunity with the school or schools to which he intends to apply and with the authorities of his church in order to learn what will best prepare him for the specific program he expects to enter. He will be likely to find under the guidance of the seminary that he should consider the following subjects:

"English language and literature; history, including non-Western cultures as well as European and American; philosophy, particularly its history and its methods; natural sciences, both the physical and the life sciences; social sciences, where psychology, sociology, and anthropology are particularly appropriate; the fine arts and music, especially for their creative and symbolic values; Biblical and modern languages; religion, both in the Judaeo-Christian and in the Near and Far Eastern traditions.

"Some seminaries require Greek or Hebrew for admission, and many advanced biblical courses are offered in the original tongues; modern languages have a less direct but immensely educative role and are required at the graduate studies level.

"It is the understanding gained in these fields rather than the total of credits or semester hours which is significant.

"In many seminaries students who have been well prepared in religion and equipped with the tools of theological study will be set free, not to complete their theological course more quickly, but rather to pursue more advanced studies. The principle constantly to be kept in mind is not that of satisfying paper regulations and minimum requirements, but of making the most of opportunities for education."

Professional Combination Courses

The provision whereby a senior may elect the work of the first year in a professional school of the University shall apply solely to eligible students in Trinity College or The Woman's College. The privilege of completing a combined course for the degree is conditioned upon admission to the professional school at the close of the junior year. A student thus admitted registers as a senior in college and as a first-year student in the professional school.

Forestry. Preprofessional training in forestry is offered to men and

women who are planning careers in professional forestry. A student who has completed a three-year program of studies in liberal arts and sciences and who has maintained a satisfactory academic record may, with the approval of the dean of his college and the School of Forestry, respectively, transfer to the School of Forestry. Upon the satisfactory completion of the forestry courses ordinarily required in the first year in the School of Forestry (see *Bulletin of the School of Forestry*), the student will be eligible for the degree of Bachelor of Science from Duke University.

The professional degree of Master of Forestry may be earned upon satisfactory completion of three additional semesters in the School of Forestry.

Students interested in this combined course are encouraged to consult with the Dean of the School of Forestry.

Law. A student with a distinguished academic record who has completed 96 semester hours of undergraduate work, including the uniform course requirements for the degree of Bachelor of Arts and work of the junior year in his major and related fields, may, with the approval of the Dean of the college, transfer to Duke University School of Law and be eligible for the degree of Bachelor of Arts from Duke University upon completion therein of the work of the first year.

However, study in the Law Combination Program is contingent upon admission to the Duke University School of Law which usually requires an undergraduate degree as a prerequisite for admission. Only in unusual occasions of proved academic excellence will the Law School admit a student after the completion of his junior year.

It is understood that this program shall apply solely to eligible undergraduates who have completed three years in residence in Duke University, and that not less than the full first-year's work of the Law School will be acceptable for credit towards the bachelor degree.

School of Engineering

Bachelor of Science in Engineering

The School of Engineering offers a four-year program leading to the degree of Bachelor of Science in Engineering (B.S.E.), with opportunity for majors in the professional fields of civil, electrical, mechanical, or biomedical engineering, as well as for programs in selected interdisciplinary fields such as engineering mechanics, energy conversion, materials, systems and controls, and the like.

For graduation with a bachelor's degree in Engineering, a minimum of

134* semester hours of course work must be completed, including the following:

English. 6 s.h. This requirement is met by the completion of English 1-2.

Mathematics. 15 s.h. This requirement is met by completion of Mathematics 21, 22, 51, 63, and 111.

Natural Science. 16 s.h. This requirement is met by completion of Chemistry 1 and 2 and Physics 41 and 42.

Social Sciences or History. 6 s.h. This requirement may be satisfied by 6 hours from the following: Economics 1, 2, or 51, 52; History 1-2, or 51-52; Political Science 11 or 61 and another 3 s.h. political science course; Psychology 91, to be followed by either Psychology 100 or 101; Sociology 91 and another 3 s.h. sociology course.

* *Reserve Officers Training Programs.* A maximum of 6 hours of junior or senior level Air Science or Naval Science course work may be counted in satisfying the minimum requirements of 134 hours for a baccalaureate degree in engineering. These 6 hours may not be substituted for any of the above requirements in English, Social Sciences or History, Humanities, or electives in Social Sciences, History, or Humanities. All other credits earned in Air Science or Naval Science are taken in addition to the minimum program.



Humanities. 6 s.h. This requirement may be satisfied by 6 hours from the following: English 55-56, 57-58; Classical Studies 111, 112, 121, 122; all foreign language literature courses above 100 not given in translation; Philosophy 41-42, 93-94; Art 51-52; Music 1-2, 51-52; Religion 1-2 or 51-52, 55, courses numbered 60-99.

Electives in Social Science, History, or Humanities. 6 s.h. In addition to the above, the student must elect a minimum of 6 semester hours of courses in social sciences, history, or humanities.

Physical Education. 4 s.h. Physical education is required during each of the first two years and is normally completed by the end of the sophomore year.

Departmental or Major Specifications. 43 s.h. In addition to the above requirements, 43 hours of courses in the third and fourth year are specified by the engineering department in which the student is registered. A minimum of 16 hours of the 43 must be engineering courses of which 6 hours must be design-oriented studies.

Engineering Core Courses. 32 s.h. The normal engineering program includes 32 hours of engineering core courses and is met by completion of Engineering 1, 2, 23, 53, 63, 73, 83, 101, 113, 123, 133, 143. Under special circumstances, a minimum of 10 hours of the normally required 13 hours of common-core engineering courses from the third- and fourth-year programs may be approved.

To provide the engineering student with the necessary background in fundamentals upon which a variety of engineering programs of study can be based, and to relieve him of the necessity of committing himself immediately to a specific major branch of engineering, a common core of courses is provided for the freshman, sophomore, and part of the junior years.

Program of Studies for the Degree of Bachelor of Science in Engineering

Freshman Year

First Semester	*s.h.*	*Second Semester*	*s.h.*
Chem 1—Gen. Inorg. Chemistry	4	Chem 2—Gen. Inorg. Chemistry	4
Egr 1—Engineering Design I	2	Egr 2—Engineering Design II	2
Engl 1—Freshman Composition	3	Egr 23—Statics	3
Math 21—Introd. Calculus	3	Engl 2—Freshman Composition	3
Math 51—Introd. to Digital Comp.	3	Math 22—Introd. Calculus	3
PE—Physical Education	1	PE—Physical Education	1
	16*		16*

*Freshman engineering students taking Air Science or Naval Science may need to schedule certain courses in addition to the 16 semester hours prescribed.

Sophomore Year

First Semester	*s.h.*
†Egr 73—Mechanics of Deformable Bodies	3
†Egr 83—Structure & Properties of Solids	3
Social Science, History, or Humanities	3
Math 63—Intermed. Calculus	3
Phys 41—General Physics	4
PE—Physical Education	1
	17

Second Semester	*s.h.*
†Egr 53—Engineering Design III	2
†Egr 63—Introductory Electric Systems I	4
Social Science, History, or Humanities	3
Math 111—Appl. Math Anal. I	3
Phys 42—General Physics	4
PE—Physical Education	1
	17

Junior Year

See departmental programs: pages 19, 20, 21, or 22.

Senior Year

See departmental programs: pages 20, 21, or 22.

Program of Study in Civil Engineering for the Bachelor of Science in Engineering Degree

For uniform *freshman* and *sophomore* program see pages 18 and 19.

Junior Year

First Semester	*s.h.*
Δ*Social Science, History, or Humanities	3
*Egr 113 Introductory Electric Systems II	3
*Egr 123 Dynamics	3
*Egr 143 Fluid Mechanics	2
CE 131 Structural Mech. I	3
ΔApproved Elective	3
	17

Second Semester	*s.h.*
Δ*Social Science, History, or Humanities	3
*Egr 101 Thermodynamics	3
*Egr 133 Heat Transfer	2
CE 96 Measurements	3
CE 123 Hydraulic Engrg.	3
ΔApproved Elective	3
	17

* Common-Core Courses.

† The combination of Egr 73 and 83 is interchangeable with the combination of Egr 53 and 63.

ΔPart of a program of electives planned with departmental approval to suit the interests and abilities of the individual student. The program will include a minimum of 6 semester hours of either economics or political science, as well as a minimum of 9 semester hours in mathematics, the natural sciences, or other technical subjects. English 93 will normally be part of these 9 semester hours.

Senior Year

First Semester	*s.h.*	*Second Semester*	*s.h.*
Δ*Social Science, History, or Humanities	3	Δ*Social Science, History, or Humanities	3
CE 118 Materials	2	CE 116 Transportation	3
CE 124 Sanitary Engrg.	3	CE 134 Struct. Design II	3
CE 133 Structural Design I	3	CE 150 Engrg. Systems	2
CE 139 Soil Mechanics	3	CE Elective	3
ΔApproved Elective	3	ΔApproved Elective	3
	17		17

Under special circumstances, a minimum of 25 semester hours of the normally required 31 semester hours of civil engineering courses may be approved by the Director of Undergraduate Studies.

Program of Study in Electrical Engineering for the Bachelor of Science in Engineering Degree

For uniform *freshman* and *sophomore* program see pages 18 and 19.

Junior Year

First Semester	*s.h.*	*Second Semester*	*s.h.*
Δ*Social Science, History, or Humanities	3	Δ*Social Science, History, or Humanities	3
*Egr 113 Introd. Electric Systems II	3	*Egr 101 Thermodynamics	3
*Egr 123 Dynamics	3	*Egr 133 Heat Transfer	2
*Egr 143 Fluid Mechanics	2	*Egr 163 Fields	3
Math Elective beyond Math 111	3	Math Elective beyond Math 111	3
Phys 161 Modern Physics	3	EE 161 Electronics and Signals	3
	17		17

Senior Year

First Semester	*s.h.*	*Second Semester*	*s.h.*
Δ*Social Science, History, or Humanities	3	Δ*Social Science, History, or Humanities	3

*Common-Core Courses.

ΔPart of a planned program of electives to be chosen in consultation with the adviser.

EE 162 Electromechanical Energy Conversion	2
EE 163 Physical Electronics	3
EE 164 Electromagnetic Fields and Waves	3
△EE Elective	3
△Approved Elective	3
	17

EE 167 Design Colloquium	2
△EE Elective	3
△EE Elective	3
△Approved Elective	3
△Approved Elective	3
	17

Program of Study in Mechanical Engineering for the Bachelor of Science in Engineering Degree

For uniform *freshman* and *sophomore* program see pages 18 and 19.

Junior Year

First Semester

	s.h.
△*Social Science, History, or Humanities	3
*Egr 123 Dynamics	3
*Egr 101 Thermodynamics	3
*Egr 143 Fluid Mechanics	2
Math Elective beyond Math 111	3
ME 133 Mechan. Design I	3
	17

Second Semester

	s.h.
△*Social Science, History, or Humanities	3
*Egr 113 Introductory Electric Systems II	3
*Egr 133 Heat Transfer	2
△Approved Elective	3
ME 102 Thermodynamics II	3
Phys 161 Modern Physics	3
	17

Senior Year

First Semester

	s.h.
△*Social Science, History, or Humanities	3
†ME 122 Transport Phenomena	3
ME 134 Mech. Design II	2
ME 136 Response of Systems	3
△△ME Elective	6
△Approved Elective	3
	17

Second Semester

	s.h.
△*Social Science, History, or Humanities	3
ME 161 Mech. Engrg. Lab.	2
ME Design Elective	3
△△ME Elective	6
△Approved Electives	6
	17

△Part of a planned program of electives to be chosen in consultation with the adviser.

*Common-Core Courses.

†With approval of the adviser, Egr 163 (Fields) or ME 226 (Intermediate Fluid Mechanics) may be substituted for ME 122.

△△Three of the nine s.h. of ME electives must be design oriented. A current listing of design-oriented courses is maintained by the department.

Program of Study in Biomedical Engineering for the Bachelor of Science in Engineering Degree

For uniform *freshman* and *sophomore* program see pages 18 and 19.

Junior Year

First Semester	s.h.	*Second Semester*	s.h.
△Social Science, History, or Humanities	3	△Social Science, History, or Humanities	3
*Egr 113—Intro. Electric Systems II	3	*Egr 123—Dynamics	3
Math 112—Appl. Math. Analysis II	3	Egr 101—Thermodynamics	3
Chem 151—Organic Chem	4	Chem 152—Organic Chem	4
Biology 1—General Biology	4	Biology 2—General Biology	4
	17		17

Senior Year

First Semester	s.h.	*Second Semester*	s.h.
△Social Science, History, or Humanities	3	△Social Science, History, or Humanities	3
*Phys 161—Modern Physics	3	*Egr 163—Fields	3
*Egr 133—Heat Transfer	2	*Egr 143—Fluid Mechanics	2
Egr Elective	3	Egr Elective	3
Egr Elective	3	Egr Elective	3
△†Elective	3	△†Elective	3
	17		17

△Part of a planned program of electives to be chosen in consultation with the Adviser.

*These courses may be interchanged in any manner that maintains 17 s.h. per semester.

†It is recommended that students utilize these electives to strengthen their biomedical competence.

Interdisciplinary Program

This program parallels the majors in civil, electrical, mechanical, and biomedical engineering and, subject to faculty approval, is offered in areas such as engineering mechanics, energy conversion, materials, and systems and controls.

The following requirements govern the interdisciplinary program:

1. The program shall meet the requirements of the Bachelor of Science in Engineering degree as outlined on the preceding pages, and shall in addition contain the requirements:

(*a*) A minimum of 16 s.h. of engineering course work in addition to common-core courses must be taken in the third and fourth years, of which 6 s.h. must be design-oriented studies.

(*b*) Limitation shall be placed on the amount of work which can be taken in a given department during the third and fourth years so that the advantages of interdisciplinary studies may be realized.

2. Each student enrolled in an approved interdisciplinary program shall be assigned to an appropriate engineering department for administrative purposes.



Special and Cooperative Programs

Reserve Officers Training Corps

Through the Naval and Air Force Reserve Officers Training programs the University is cooperating with the Department of Defense in providing well-educated officers for the regular and reserve forces of the Nation.

The Naval Reserve Officers Training Corps

There are two basic programs through which students can qualify for Naval commissions upon graduation; one, the Regular Naval Reserve Officers Training Corps program, which provides a maximum of four years in the University largely at government expense, followed by a commission in the regular Navy or Marine Corps; the other, the Contract program, which leads to a commission in the Naval Reserve or the U. S. Marine Corps Reserve.

The Regular Student. Quotas are awarded on the basis of an annual nationwide test and selection procedure. Students selected are enlisted in the U.S. Naval Reserve, appointed Midshipmen, USNR, and receive four years tuition, fees, and textbooks at government expense. In addition they receive subsistance pay and summer active duty pay which amounts to approximately $750 per year. The regular midshipman may

take any major at Duke leading to a baccalaureate or higher degree with certain exceptions, e.g., law, pre-medicine and medicine, religion, pre-theological and theological study, music and art. He participates in two summer training cruises aboard ship and receives aviation and amphibious indoctrination at naval shore stations for one summer.

Upon graduation he receives a commission as Ensign in the Regular Navy, or Second Lieutenant in the Regular Marine Corps, after which he serves with the Navy or Marine Corps, as required by the Secretary of the Navy in the same manner as his officer contemporaries who are graduates of the U.S. Naval Academy. The minimum period of active duty is four years for regular officers.

The Contract Student. The contract student is selected from those regularly enrolled freshmen in Duke University who desire to qualify for a commission in the Naval or Marine Corps Reserve while pursuing normal courses of study. Since he normally will be ordered to three years active duty immediately upon graduation and commissioning, the Navy does not recommend that a medical, dental or theological student apply for this program. He has the status of a civilian who has entered into a mutual contract with the Navy and is not eligible for the benefits and pay received by regular midshipmen. He enlists in a component of the U.S. Naval Reserve and receives subsistence pay of $50 a month during his last two academic years. In addition he receives active duty pay during the two required summer cruises, normally taken after his sophomore and junior years (only one cruise is required of the class of '71 and earlier classes). Limited numbers of non-NROTC students who are in good standing at the end of their sophomore year may, after successful completion of a special six week summer training session, be enrolled as Contract Students at the commencement of their junior year. Upon graduation, the Contract Student is commissioned in the Naval or Marine Corps Reserve and reports for a minimum of three years' active duty, after which he may request transfer to the regular component of the Navy or Marine Corps, retention on active duty as a reservist, or transfer to the inactive reserve.

Both Regular and Contract Students. No distinction is made between the two in the NROTC Unit. Contract students may compete each year for the Regular Program. If selected, they will be appointed to Regular status with the attendant benefits and pay. Both Regular and Contract Students are deferred from Selective Service by virtue of their commitment to serve on active duty after graduation; both are provided necessary uniforms, equipment and naval science textbooks; both are furnished the same naval science instruction and uniforms, and both are required to wear uniforms on drill days and other special occasions prescribed by the Professor of Naval Science. Upon completion of their undergraduate work, both may apply for continuing studies leading to a graduate degree in certain science and engineering fields. Selection for

graduate work is competitive and the number selected is based on the needs of the Navy. If they desire, both Regular and Contract Students may elect the Marine Corps option at the beginning of their junior year, thus qualifying for a commission in the Marine Corps. Both may participate in a Navy sponsored Flight Instruction Program leading to qualification for a private pilot's license, if successfully completed.

Academic Requirements for a Commission

Regular and Contract NROTC students in the Class of 1971 and earlier are required to complete academic requirements as set forth in their contract with the Navy and as outlined in the 1968 edition of this *Bulletin.* They are encouraged to elect courses under the revised requirements listed below.

The academic program for an approved degree and a commission for Regular and Contract students in the Class of 1972 and later must include all Naval Science courses offered and the following:

For NROTC students majoring in engineering, physics, chemistry, mathematics, or education with teaching majors in mathematics or physical sciences: one year of calculus, one year of physics or chemistry, and Mathematics 51—to be completed by the end of the junior year. History 99 and Political Science 121 to be completed prior to graduation.

For NROTC students majoring in arts, humanities, business, political science, economics and non-physical science or non-mathematics teaching majors in education: one year of calculus (preferred), or one year of statistics and probability; one year of physics or chemistry (preferred), or one year of biological/earth sciences; and Mathematics 51—to be completed by the end of the junior year. History 99 and Political Science 121 to be completed prior to graduation.

The Air Force Reserve Officers Training Corps

This unit functions as a regular department of instruction known as the Department of Air Force Aerospace Studies. It selects, trains, and commissions college men who desire to serve in the U.S. Air Force.

For enrollment in the General Military Course (freshman and sophomore years) the student must be accepted by the institution as a regularly enrolled student; must successfully complete such general survey and screening tests as may be prescribed; and must sign a loyalty certificate with the U.S. Government. Students initially entering the University who have had previous preparatory or high school military training are normally accepted in the General Military Course at the same academic level as that in which they are accepted by the University. The student may elect to attend a six weeks Field Training Course conducted at selected Air Force Bases instead of enrolling in the General Military Course. If he chooses this option he will report to the Field Training Unit

during the summer between his sophomore and junior years. To be eligible for continuation, or initial enrollment, in the Professional Officer Course (junior and senior years), a person must:

1. be a citizen of the United States;
2. be selected for advanced training under Air Force procedures;
3. enlist in the United States Air Force Reserve;
4. contract, with the consent of his parent or guardian if he is a minor, to complete the program of advanced training;
5. agree in writing to accept a commission in the U.S. Air Force, and to serve in the Air Force for the prescribed period;
6. complete successfully:
   a. the General Military Course; or
   b. six weeks of summer Field Training; or
   c. have had prior honorable service in the Armed Forces of the United States. Students who qualify for the Professional Officer Course by successfully completing the General Military Course must attend four weeks of Field Training between their junior and senior years. Students must also agree to take orientation flights when offered; must be less than 28 years of age at the time of graduation; and must successfully complete such general survey and screening tests as may be prescribed and must be selected by the Professor of Aerospace Studies and the appropriate authority of the University.

Beginning in the second semester of their freshman year, cadets are eligible to compete for a financial assistance grant. This grant includes tuition, books, laboratory fees, and $50.00 a month subsistence. The grant is awarded on a merit basis and considers academic achievement, leadership potential, and over-all performance. The grant can become effective in the sophomore year.

All students in the Professional Officer Course receive $50.00 per month subsistence and are deferred from Selective Service. All uniforms, books, and training items needed for participation in the AFROTC program are supplied by the corps after receiving a $20.00 deposit. This deposit is refunded to the student whenever he terminates his corps status.

A thirty-five hour Flight Instruction Program using light aircraft is restricted to seniors who may, upon completion of the course, qualify for a Civilian Private Pilot's License. To participate in this program, Fourth Year Cadets must be physically and aptitudinally qualified for the Air Force Flight Instruction Program.

Upon graduation and completion of the Professional Officer Course, selected students for flying or line assignment will be offered commissions as Second Lieutenants in the Air Force Reserve. Reserve Officers who desire lifetime careers in the Regular Air Force may apply for regular appointments after serving on active duty for one year. Cadets who maintain a high academic and aptitudinal average are eligible for designa-

tion as Distinguished AFROTC Cadets and later Distinguished AFROTC Graduates. A designee, if fully qualified, may apply for a regular commission upon graduation.

Advanced Placement Program

The colleges have arranged for course placement on the basis of good performance on either the Advanced Placement Examinations of the CEEB or—to a more limited extent—on placement tests given by the colleges during Orientation. The College Board Advanced Placement Examinations are a vehicle to courses on the sophomore level or higher in botany, chemistry, English, French, German, history, Latin, mathematics, physics, Spanish, and zoology, whereas the Duke tests are used to decide such placement only in foreign languages, biological science, and mathematics. A further distinction is that only the AP Examinations may lead to credit toward graduation for the course or courses omitted and waiver of *uniform course requirements.* The departmental directors of undergraduate study and the University Registrar are charged with the responsibility for evaluations leading to advanced placement of freshman matriculants.

Advanced Placement Examinations are given in May by the College Entrance Examination Board. Information regarding the tests may be obtained from the Board.

Study Abroad

Special programs for study abroad are available to Duke students. Some of these noted below are organized by the University and others are available through special cooperative arrangements. In certain cases scholarship aid may be applied to study abroad.

A student contemplating study abroad should be guided by the following provisions established by the Undergraduate Faculty Council and administered by the Committee on Study Abroad.

The student should

1. have a scholastic average of at least 2.5 (recommended);
2. obtain prior permission to study abroad from major adviser and academic dean;
3. receive certification from the foreign language department concerned that he can handle adequately the language of the country where he will study, provided that the language be taught at the freshman-sophomore level at Duke;

4. obtain, before matriculation, approval of his program of studies from major adviser and academic dean.

If the student wishes to transfer credit to Duke

1. and is participating in a program sponsored by an American group, the group must have been approved by the above committee and the program he proposes must meet the qualifications of the sponsoring group
2. or studies abroad under his own sponsorship, work to be considered for transfer must be done in the language in which courses are normally given in the institutions attended.

A leave of absence from the University is arranged for students who qualify. When possible, arrangements are made for students to preregister while abroad for the semester in which they return.

Semester Study Abroad

Currently three programs are offered for a semester abroad:

Aix-en-Provence, France. Participating with the Vanderbilt in France program, courses are given during both Fall and Spring in French language, art, philosophy, literature. Completion of French 64, or equivalent, is required prior to departure.

Madrid, Spain. In cooperation with the Vanderbilt in Spain program for either Fall or Spring, work is given in Spanish language, art, music, and history. Completion of Spanish 64, or equivalent, is required prior to departure.

Rome, Italy. The Department of Classical Studies offers its majors the opportunity of studying Greek, Latin, Italian, ancient history, and ancient art and archaeology at the Intercollegiate Center for Classical Studies in Rome.

Summer Study Abroad

Duke University sponsors a variety of summer programs abroad. Open to qualified Duke students these programs have taken place in France, Germany, and Italy. Students are selected competitively and have an opportunity to earn up to eight hours of credit.

Information regarding study abroad may be obtained from Deans Jane Philpott and Peter Carbone. In all cases they must be informed in advance concerning participation in study abroad.

Intercollegiate Center for Classical Studies

As one of the participating members in the Intercollegiate Center for Classical Studies in Rome, Duke University may nominate majors in

Classical Studies for admission to a semester's work at the Center, usually in the junior year. Instruction is offered in Greek, Latin, ancient history, and ancient art and archaeology. Students in the program do not withdraw from Duke in the usual sense; grades transfer as earned. Overall 3.0 q.p.r. is required for admission. Some scholarship help is available. Students should consult Professors Richardson or Stanley for additional information.

Reciprocal Agreement with the Consolidated University of North Carolina and North Carolina College

Under a plan of cooperation between the Consolidated University of North Carolina and Duke University, and between North Carolina College and Duke University, students regularly enrolled in the Consolidated University and in North Carolina College during the regular academic year, and paying full fees to their institution may be admitted to two approved courses per semester at Duke University upon payment of a nominal registration fee of two dollars plus any other special fees required of all students. Under the same arrangements, students at Duke University may be admitted to one approved course per semester at the Consolidated University of North Carolina or North Carolina College.



Resources for Study

Faculty

Numbering over 900, the faculty is large enough to maintain a tradition of personal attention to students. Many members of the faculty are or have been national leaders in their various professional organizations, as well as consultants to industry, government, or foundations, and their contributions to scholarship include innumerable publications in all areas of research. To honor outstanding faculty members, the University has established thirty-three James B. Duke professorships, and there are sixteen other named professorships as well.

University Libraries

To support a rich educational experience in a world of rapid and far-reaching change, great library collections are essential. Undergraduate students at Duke are fortunate to have available exceptional resources. The University library, among the first seventeen university libraries in the country, contains 1,940,146 volumes and 4,000,000 manuscripts. In 1967-68, 80,000 volumes were added. About 10,000 periodicals and 170 foreign and domestic newspapers are regularly received. Separate depart-

mental and professional school libraries provide notable collections in the several disciplines.

A division of photographic services, with the most modern cameras and other equipment for microfilming and photographing printed and manuscript materials, provides a battery of reading machines to serve the Library's large collection of microfilms of rare books, periodicals, and newspapers.

A new research library building, adjoining the present building on the West Campus and providing more than twice the space earlier available for books and readers, was occupied in the fall of 1968. The entire complex was named on Founder's Day in 1966 the William R. Perkins Library, in honor of a close associate of Mr. James Buchanan Duke.

The Woman's College library, with its own attractive Georgian building, contains 170,000 volumes in an open stack collection, chiefly those books most frequently used in the undergraduate curricula. The School of Engineering also maintains its own library which contains 41,000 volumes and 450 periodicals. The larger collections of the main and specialized libraries are at hand when needed.

More detailed information may be obtained in a "Student's Guide to the General Library," available on request to the Librarian of the University.

Laboratories

In addition to the laboratories in the various science departments (Botany, Chemistry, Geology, Physics, Psychology, and Zoology), there are specialized facilities at Duke University Marine Laboratory in Beaufort, North Carolina; at Highlands Biological Laboratory in Highlands, North Carolina; in the Duke Forest at Durham, North Carolina; and in the Sarah P. Duke Gardens on the West Campus of Duke University.

Admission

New students are admitted to the undergraduate colleges in September of each year.

The size of the entering classes is approximately as follows: Trinity College, 675; The Woman's College, 375; School of Engineering, 125; School of Nursing, 80. Since enrollment is limited, the Committee on Admissions selects those students who in its judgment are best qualified to benefit from the opportunities which the colleges offer. Selection is based not only upon grades and test scores but also upon recommendations of school officials and other personal criteria.

Requirements

Although there are no inflexible subject matter requirements, at least fifteen acceptable units of secondary school credit must be presented. Of these at least twelve must be in college preparatory subjects: English, foreign language, history and social studies, mathematics, and physical or biological sciences. Applicants for the School of Engineering are advised to present four units of mathematics and at least one unit in physics or chemistry.

Students applying for admission are required to take the Scholastic Aptitude Test, the English Composition Test, and two other achievement tests of their own choosing given by the College Entrance Examination Board. It is recommended that an applicant who has had two or more years of a foreign language in secondary school take the achievement in that language. The foregoing recommendation is not applicable to candi-

dates for the School of Engineering. Candidates applying to the School of Engineering must include the appropriate mathematics test.

Prospective students are urged to broaden their reading outside of class during their senior year and to make the acquaintance of books and magazines that do not form part of the subject matter of their courses. At the same time, they should take every opportunity to increase their competence in writing. Those who cannot write simple, clear, grammatical English prose will be progressively at a serious disadvantage in the competition for admission and also in the general work of the freshman year.

Early Decision Plan

For the well-qualified student who has definitely decided to enter Duke if accepted, the University offers to reserve a place by Early Decision on December 1 of the student's senior year in secondary school. The deadline date for completing applications for Early Decision is November 1; therefore, prospective Early Decision candidates should make arrangements to take the Scholastic Aptitude Test and three Achievement tests, including English composition, on or before the July testing date preceding their senior year.

Regular Admission

Candidates for regular admission must apply no later than January 15, and normally do so during the fall of the senior year. For this group, decisons are mailed by April 15.

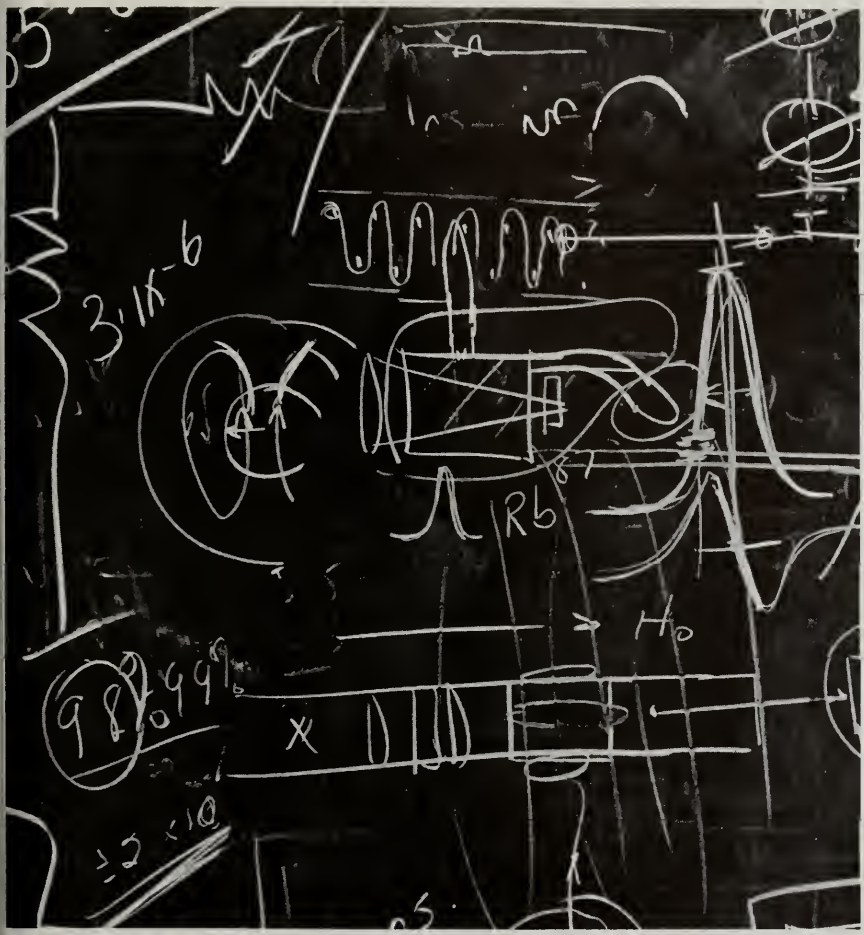
Application forms and instructions regarding procedure and necessary documents to be included will be sent upon request to the Office of Admissions, Duke University, Durham, North Carolina, 27706. A nonrefundable processing fee of $15.00 must accompany the application form.

A candidate for admission who wishes to arrange an interview should do so through the Director of Undergraduate Admissions.

Admission to Advanced Standing

Admission by transfer from other institutions may be arranged for a number of students under certain well-defined regulations. All such candidates must submit official transcripts of all work completed at other colleges, accompanied by a statement of honorable dismissal and scores on the Scholastic Aptitude Test of the College Entrance Examination Board. Courses on which a grade less than C has been earned cannot be accepted for transfer credit. Students may not apply for transfer beyond admission to the junior class.

A small number of special students of mature age may be admitted for



such courses of instruction as their earlier training and experience may qualify them to take. They may not be accepted as candidates for a degree, however, unless they are able to meet all normal requirements for admission.

Readmission of Former Students

A student who desires to return, following withdrawal from college, should apply to the Director of Undergraduate Admissions. He will be asked to send a detailed statement of his activities since withdrawal. If practicable, the student should arrange for an interview with the appropriate dean of his college.

Financial Information

Tuition, Fees, and Other Expenses

The prospective student who seeks the optimum opportunity in higher education will not be a bargain hunter. Certainly, some sound plan for paying the cost of college must be devised, but this plan should be formulated after the thoughtful selection of an institution has been made. No college or university can honestly say that an education at the college level is inexpensive. Most university people and the ever growing college alumni families across our nation, however, will reflect the feeling that the benefits derived from a college education constitute a handsome return on the dollars invested.

Each student going to college should analyze carefully his financial situation. In making such analysis it should be recognized that the primary responsibility for defraying the cost of an education lies with the student and his family. The typical college student can depend upon some contribution from his family's current income, a proportionate share of family savings, and anticipated income from summer employment. The number of years of study contemplated and the number of dependent children in the family should be considered in computing the funds which will be available in a particular year.

Fees paid by the students cover only a part of the cost of their instruction and of the operations of the University. Income from endowment

and contributions from the alumni, alumnae, and other public-spirited men and women meet the balance, which constitutes more than half the total cost.

Estimated Expenses for an Academic Year

Certain basic expenditures are to be considered in preparing a student's budget, such as tuition, general fee, room and board. These necessary expenditures together with a reasonable amount allotted for miscellaneous items such as books and supplies are shown below:

	Men	*Women*
Tuition	$1,800.00	$1,800.00
General Fee	200.00	200.00
Room Rent (Double Room)	335.00	360.00
Board	*650.00	†550.00
Books and Supplies	150.00	150.00

*Cafeteria estimate.
†Board rate.

It should be realized that additional expenses will be incurred which will depend to a large extent upon the tastes and habits of the individual. It is realistic to suggest that the average Duke student, however, can plan on a budget of $3,600.00 for the academic year. Travel costs, clothing purchases, and other major expenditures would have to be added to this estimate.

Debts

No records are released and no student is considered by the faculty as a candidate for graduation until he has settled with the Bursar for all indebtedness.

Bills may be sent to parents or guardians provided the Bursar has been requested in writing to do so. Failure to pay bills on or before the due dates will debar the student from class attendance until the account is settled in full.

Tuition and Fees

Tuition. The tuition of $900.00 and the general fee of $100.00 are due and payable not later than the day of registration for a particular semester. After the day of registration no refund of the tuition or the general fee will be made except for involuntary withdrawal to enter the armed services.

Registration Fees and Deposit. New students, on notification of acceptance, are required to pay a non-refundable first registration fee of $20.00 and to make a deposit of $50.00. The deposit will not be re-

funded to accepted applicants who fail to matriculate. For those who do matriculate, $25.00 of the deposit serves as a continuing room deposit for successive semesters, and the remaining $25.00 serves as a continuing registration deposit. Arrangements for refund of the $25.00 room deposit are described in information furnished each resident student by the Housing Bureau.

Readmission. Students who have been readmitted to the University after an absence of one or more semesters, on notification of readmission, are required to make the $50.00 room and registration deposit.

Late Registration. Students who register in either semester at a date later than that prescribed in the Calendar of the Colleges must pay to the Bursar a fee of $10.00.

Refunds. The $25.00 preregistration deposit will be refunded to students (1) whom the University does not permit to return, (2) who graduate, or (3) who request the refund at the time of preregistration, thus indicating their intention not to return for the following semester. The preregistration deposit will not be refunded to students who preregister and fail to enter the following semester on schedule.

ROTC Deposit. An Air Force ROTC deposit of $20.00 is required of students enrolling in Air Science to cover possible loss of military equipment issued to them. This deposit is refunded to the student upon return of issued equipment.

Fees for Special Students. In the regular academic year students who register for no more than two courses with a maximum credit of eight semester hours are classified as special students. They are charged a registration fee of $5.00 for each course and $65.00 for each semester hour of course credit. Registration for nine or more semester hours, or three or more courses, requires payment of full tuition and fees.

Fees for Auditing. Auditing of one or more courses without charge is allowed students paying full fees, provided that the consent of the instructor is obtained. Students who are enrolled for not less than three nor more than eight semester hours may audit other courses by payment of $32.50 for each course audited. With the consent of the appropriate instructor and the Registrar, alumni may audit undergraduate courses for $32.50 for each course audited.

Fees for Duke Employees. Certain full-time employees with two or more years of service with the University may request permission to take one or two courses (but not more than seven semester hours during any one semester) which would contribute to their professional and personal advancement. Permission may be granted based on the individual merits and circumstances of each application. Employees receiving permission to take such courses will be charged $5.00 per course plus $32.50 per semester hour. A course may not be audited unless another course is taken for credit.

Fees for Transcripts. Requests for transcripts should be directed to

the Office of the Registrar. Ten days should be allowed for processing. A minimum fee of $1.00, payable in advance, is charged for a single copy. A charge of $.50 will be made for each additional copy on the same order.

Fees for Course Changes. Changes in courses for reasons not arising within the University require a payment of $1.00 for each change made. No course may be elected later than one week after the opening of the semester, and no student may be admitted to any class without an official enrollment.

Living Expenses

Housing. In the residence houses for undergraduate men, the rental charge for a single room is $445.00 for the academic year or $222.50 for each semester; for a double room the charge is $335.00 for each occupant, or $167.50 per semester for each occupant. Rental rates in the air-conditioned dormitories are $500.00 for a single room for the academic year, or $250.00 for each semester; for a double room the charge is $375.00 for each occupant, or $187.50 per semester for each occupant. Information concerning the student's obligations under the housing contract is published in the *Undergraduate Information and Regulations—Trinity College/The School of Engineering.*

In the residential units of The Woman's College the rental charge for a single room is $480.00 for the academic year or $240.00 for each semester. The rental charge for a double room is $360.00 for each occupant, or $180.00 per semester for each occupant. A section of The Graduate Center, West Campus, is reserved for Woman's College students. Detailed information concerning the student's obligations under the housing contract is published in The Woman's College Handbook.

Food Services. The dining facilities on the West Campus include two cafeterias, with multiple-choice menus, and the Oak Room where full meals and *a la carte* items are served. The cost for the academic year will approximate $650.00 but would vary from this amount depending upon the taste of the individual.

The dining halls in which all resident women have their meals are located in The Woman's College Union and in Gilbert-Addoms residence hall. The charge for board is $275.00 per semester, payable at the time of registration. If a student withdraws during the first six weeks of the semester, a board refund is made on a *pro rata* basis; if withdrawal occurs after that time, no refund is allowed.

Student Aid

It is the aim of the Financial Aid Program to provide, insofar as possible, financial assistance required by students who are unable to defray the cost of college from their own resources. This assistance is made available in the form of scholarships, grants-in-aid, loans, and part-time employment.

In 1968-69 financial aid totaled $1,772,000.00. Of this amount $1,053,565.00 was allotted to 1,196 undergraduate students in the form of scholarships, grants-in-aid, and remissions of tuition; $318,800.00 in student loans, and approximately $400,000.00 through part-time employment on the campus and in the city of Durham and the surrounding area.

Freshmen students shared proportionately in this aid: 478 received awards totaling $474,590.00 in direct assistance not including loans or part-time employment. Loans were made to 231 students totaling $107,350.00 in addition to other assistance received from Duke University.

All requests for application materials for scholarships and other forms of financial assistance should be addressed to the Office of Undergraduate Admissions, Duke University, Durham, North Carolina 27706.

A student in residence who is receiving financial assistance based upon need may not, without special permission, register an automobile on campus during the academic year for which the aid is granted.

Scholarships

All candidates for scholarships and grants-in-aid must submit the official Application for Admission and the Application for Scholarship and Financial Aid to the Office of Admissions. Scholarship candidates who desire to be considered for the maximum value of scholarships on the basis of financial need are required to submit the Parents' Confidential Statement of the College Scholarship Service, forms for which may be obtained from any high school guidance office or from the Admissions Office.

Scholarship candidates should initiate their applications during the fall semester of their senior year of study in secondary school. Instructions concerning the specific requirements and deadline dates will accompany the application materials.

Awards annually available to undergraduate students at Duke University fall into several major categories as follows:

Angier B. Duke Memorial Scholarships. Recipients of these awards are students whose superior records mark them as young men and young women who give outstanding promise of becoming leaders in their chosen fields of endeavor. Candidates for admission to the freshman classes in Trinity College, The Woman's College, the School of Engineering, and the School of Nursing are eligible to apply.

Number available: Approximately 30 for each freshman class.
Value: $500.00 to $3,100.00 annually.

W. N. Reynolds Memorial Scholarships. Recipients of these awards are students of outstanding ability who have made superior records and show promise of constructive leadership. In considering candidates for the awards, first consideration will be given to:

1. Children of employees of R. J. Reynolds Tobacco Company or any of its affiliates or subsidiaries.
2. Children of families residing in Forsyth County, North Carolina.
3. Other candidates who are residents or natives of North Carolina.

Number available: 4 for each freshman class
Value: $500.00 to $3,100.00 annually.

Mary Duke Biddle Scholarships in Music Composition. Two scholarships, each at a fixed stipend of $2,500.00, are available to each entering class. They are renewable from year to year so long as the student does satisfactory work. The student wishing to apply for this award will proceed in the normal manner but will be required to submit manuscripts of his musical compositions. Eligibility is limited to students who plan to major in music and who have already demonstrated significant ability in music composition.

Huguenot Scholarship. A scholarship of $1,000.00 per year is available from the Huguenot Society of America to a decendant of a Huguenot ancestor.

Christian Vocations Scholarships. Students preparing to enter full-time religious work are eligible to apply for special consideration on the basis of need. These students will be required to submit the Parents' Confidential Statement. Students with need will be recommended by the Director of Undergraduate Financial Aid to the Christian Vocations Scholarship Committee which will consider the vocational commitment of the applicant. Students approved by the Christian Vocations Scholarship Committee are required to sign a note each semester for the amount of financial assistance granted to them by the University Scholarship Committee. These notes will be cancelled upon evidence that the student has entered full time Christian work after graduation.

United Methodist Scholarships. A number of United Methodist Scholarships, valued at $500.00 per year, are available on a basis of demonstrated need to Methodist students who have given evidence of leadership in their local Methodist Youth Fellowship Groups.

Corporation Scholarships. Certain scholarships financed by private corporations are available annually to undergraduate students at Duke University. The selection of the recipients of these awards is made by the University Scholarship Committee. These scholarships are assigned to students whose records of scholarship and leadership are outstanding and whose financial need can be demonstrated.

Value: $200.00 to $2,000.00 annually.

Scholarships for Foreign Students. A limited number of awards will be made each year to qualified students from other countries who enter either as freshmen or as students with advanced standing. Candidates for these awards are required to submit the Application for Scholarship and Financial Aid and the Parents' Confidential Statement of the College Scholarship Service provided by the Admissions Office of Duke University.

Grants-in-Aid

Recipients of these awards are able students who need financial assistance in order to meet the cost of attending college.

Number available: Approximately 800 annually.

Value: From $100.00 to $1,500.00 annually.

Remissions of Tuition

Children of ministers in the North Carolina and Western North Carolina Conferences of the United Methodist Church who are residents in the Conference and children of ministers of all faiths residing in Durham County are eligible to receive a remission of the tuition charge for a maximum of eight semesters of undergraduate study at Duke University.

Tuition Grants

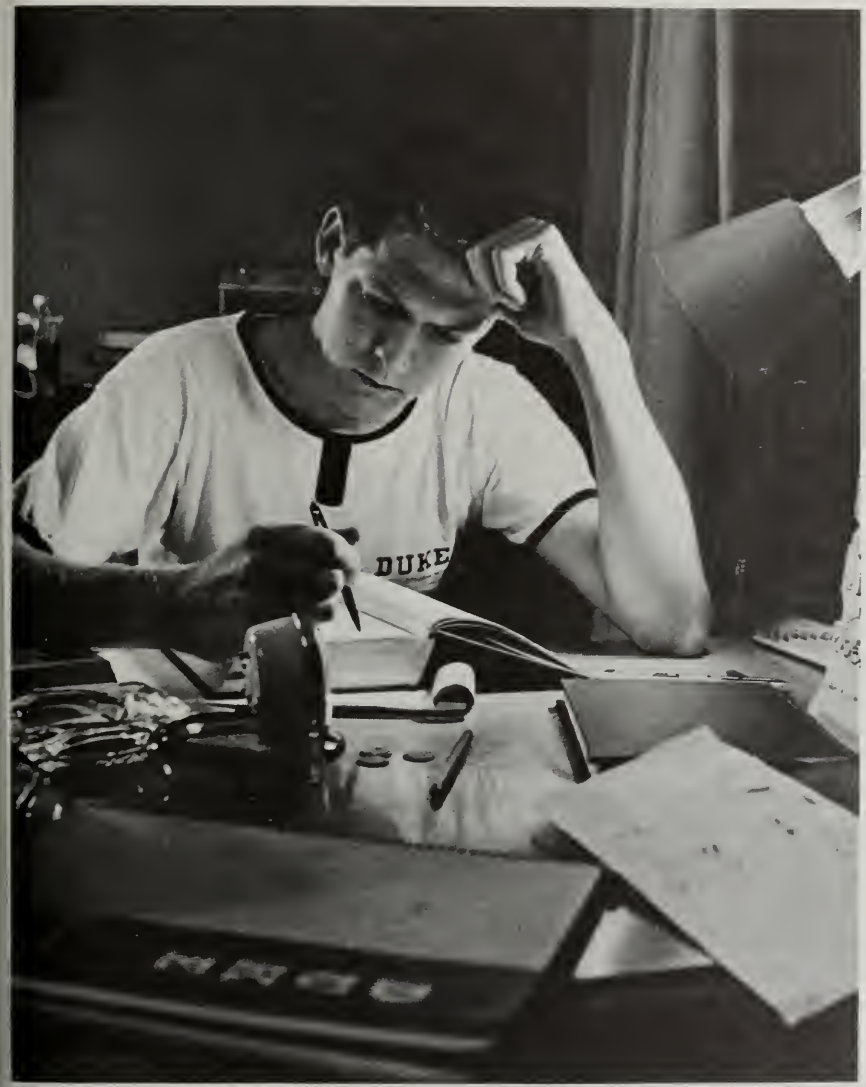
Tuition grants are available to children of qualified faculty and staff members of Duke University for a maximum of eight semesters of undergraduate study at Duke University.

Loans

Loan funds held in trust by the University as well as funds supplied by the federal government through the National Defense Education Act of 1958 are available to qualified students. Freshmen as well as upperclassmen are eligible to apply for a student loan.

Loans generally mature after borrowers have left the University. Loan interest on long term loans from University funds accrues at the rate of one per cent from the date of each note. After a student has left the University permanently, the loans begin bearing interest at the rate of three per cent per annum. The balance unpaid after five years bears interest at the rate of six per cent per annum.

In addition to local loan funds, Duke University participates in the student loan program established under the provisions of the National Defense Education Act of 1958. Repayment of loans under the National Defense Education Act of 1958 normally begins nine months after the student graduates or leaves college with complete repayment scheduled within a ten-year period. Interest accrues at the rate of three per cent commencing nine months after the borrower ceases to be a full-time stu-



dent at an institution of higher education. Special benefits to those teaching in public or private nonprofit elementary and secondary schools and in institutions of higher education permit a portion of the loan to be cancelled depending upon the length of teaching service.

Loan applications must be submitted not later than the July 1 preceding the academic year for which assistance is requested.

Employment Opportunities

The Financial Aid Office maintains an employment service for students who need part-time jobs. There are many opportunities both on the campus and in the city of Durham. A considerable number of students each year help defray their college expenses by working.

Those students accepted for admission to Trinity College and the School of Engineering in need of part-time employment should apply to the Financial Aid Office, Duke University, Durham, North Carolina. Students in the Woman's College, upperclassmen, and second-semester freshmen who need and qualify for part-time campus employment should apply to the Assistant Dean of Undergraduate Women, 111 East Duke Building, Duke University, Durham, North Carolina 27708.

Prizes and Awards

The achievements of undergraduate students are recognized in various fields of college activity. The following prizes suggest the range of the recognition:

The Debate Council. This council authorizes the awarding of medals to members of the graduating class who have represented the University in at least two intercollegiate debates. The medals are given by the local chapter of the Tau Kappa Alpha Fraternity.

The Robert E. Lee Prize. The gift of the late Reverend A. W. Plyler, of the class of 1892, and Mrs. Plyler. The sum of $50 is awarded annually at Commencement, preferably to that member of the senior class of Trinity College or the College of Engineering who, in character and conduct, in scholarship and athletic achievement, in manly virtues and capacity for leadership, has most nearly realized the standards of the ideal student.

Alpha Kappa Psi Medallion. Beta Eta Chapter of Alpha Kappa Psi, a professional fraternity in commerce, awards annually the Alpha Kappa Psi Scholarship Key to the male senior student pursuing a degree in the Department of Economics and Business Administration who has attained the highest scholastic average for three years of collegiate work in this University.

Medal of the North Carolina Association of Certified Public Accountants. The North Carolina Association of Certified Public Accountants annually awards a medal to the senior who, in the judgment of his instructors, is the most outstanding student in accounting in his graduating class.

Julia Dale Prize in Mathematics. This in an annual cash prize of at least $50. The winner is selected by the Department of Mathematics on the basis of excellence in Mathematics. In some years first and second prizes are given.

The Henry Schuman Music Prize. This prize of $100 is awarded annually to an undergraduate of Duke University for an original composition of chamber music or a distinguished paper in music history or analysis. The award is sponsored by The Woman's College and the Department of Music of Duke University through a continuing gift from Dr. and Mrs. James H. Semans who named the prize after Mr. Henry Schuman, a life-long friend of the Semans and Trent families, a talented amateur violinist, and one who helped to build valued collections in the Duke Library.

The Tau Beta Pi Prize. A prize such as an engineering handbook is awarded each year by the Beta Pi, engineering national honor society, to a sophomore student in engineering for outstanding scholastic achievement during the freshman year.

The Phi Lambda Upsilon Prize. Phi Lambda Upsilon, honorary chemical society, yearly awards a suitable prize to an outstanding junior who is majoring in chemistry. The recipent's name is inscribed on a plaque displayed in the Chemistry Library.

The American Society of Civil Engineers Prize. This prize consists of a Certificate of Award and a one year's payment of dues in the American Society of Civil Engineers. Awards are made annually by the North Carolina Chapter to the two outstanding seniors in Civil Engineering based on the recommendation of the faculty of the Civil Engineering Department. The basis for selection is the student's scholastic record, his contribution to the student chapter, and his participation in other college activities and organizations.

The American Public Works Association Prize. This prize consists of a Certificate of Award, one year's payment of dues in the American Public Works Association, and a $25 cash award made annually by the North Carolina Section to an outstanding senior in Civil Engineering based upon the recommendation of the faculty of the Civil Engineering Department. The basis of selection is the student's scholastic record and his interest in a career in public works.

The George Sherrerd III Memorial Award in Electrical Engineering. This award was established in 1958 by the parents of George Sherrerd III, a graduate of the class of 1955, to recognize outstanding undergraduate scholarship. The award, consisting of the income from a fund of $5000.00, is made annually to that senior student in Electrical Engineering who, in the opinion of the Electrical Engineering faculty, has attained the highest level of scholastic achievement in all subjects and simultaneously has rendered significant service to the School of Engineering and the University at large. The recipient's name is inscribed on a plaque displayed in the Engineering Building.

The Charles Ernest Seager Memorial Award. This award, established in 1958 by the widow and friends of Charles Ernest Seager, a graduate of the class of 1955, recognizes outstanding achievement in the annual Stu-

dent Prize Paper Contest of the Duke Branch of the Institute of Electrical and Electronics Engineers. The award consists of inscribing the name of the contest winner on a plaque displayed in the Engineering Building.

The Milmow Prize. This prize consists of a certificate of award and a one year's payment of dues in the Institute of Electrical and Electronics Engineers for the membership year in which the honoree is awarded his baccalaureate degree. It is awarded annually to that student from North or South Carolina graduating in the Department of Electrical Engineering who, in the opinion of the faculty of that department and as shown by his grades, has made the most progress in electrical engineering during his last year in college.

The T. C. Heyward Award. This award is given annually to the outstanding Mechanical Engineering Sophomore by Pi Tau Sigma. The award will normally consist of a handbook as well as a small cash award.

The Walter J. Seeley Scholastic Excellence Award. This award is presented annually by the Engineers Student Council, in the name of Dean Emeritus Walter J. Seeley, to that member of the graduating class of the School who has achieved the highest scholastic average in all subjects and who has shown diligence in the pursuit of an engineering education. The recipient of the award is determined by a committee composed of the chairmen of the respective departments, the Assistant Dean of the School of Engineering, and a representative of the Engineers Student Council. This award is initiated in the spirit of academic excellence and professional diligence demonstrated by Dean Seeley. The Council hopes that this award will serve as a symbol of the man and the ideals for which he stands.

The Chemistry Department Award. This prize is awarded in the spring of each year for scholarship in chemistry, physics, and mathematics. The prize consists of a one-year junior membership in the American Chemical Society and a one-year subscription to either the *Journal of the American Chemical Society* or *Industrial and Engineering Chemistry*. To qualify for this prize, the student must (1) be enrolled as an undergraduate of Duke University and (2) be taking or have taken a fourth-year chemistry course. The selection is based on the quality-point average for all courses taken in chemistry, physics, and mathematics. In case of a tie equal awards are given.

The James B. Rast Memorial Award in Comparative Anatomy. This award is given annually by the parents of James Brailsford Rast in memory of their son, a member of the class of 1958 at Duke University. The award, consisting of the *Atlas of Descriptive Human Anatomy* by Sobotta and bearing the James B. Rast Memorial bookplate, is given to the student who demonstrates the greatest achievement in the study of comparative anatomy.

The Anne Flexner Memorial Award in Creative Writing. This award has been established by the family and friends of Anne Flexner, who grad-

uated from Duke in 1945. It consists of fifty dollars in cash and a number of books chosen by the student. The award is given annually for the best piece of creative writing submitted by a Duke undergraduate. The competition is limited to short stories (5,000 word limit), one-act plays (5,000 word limit), poems (100 line limit), and informal essays (3,000 word limit). Only one manuscript may be submitted by a candidate, and it must be delivered to the English Office, Room 325 Allen Building, before April 15.

The William Senhauser Prize. This prize is given by the mother of Willam Senhauser in memory of her son, a member of the Class of 1942, who lost his life in the Pacific Theatre of War on August 4, 1944. The award is made annually to the sophomore or junior in Trinity College or the School of Engineering who has made the greatest contribution through participation and leadership in intramural sports. The winner of this prize is chosen by a committee selected by the President of the University.

The Friends of Duke University Library. This group offers three prizes in an annual contest open to all undergraduate students for the best book collections acquired during their college year. The contest is supervised by the Undergraduate Committee of the Friends of the Library, which announces each fall the terms of the award. Inquiries may be directed to the Curator of Rare Books. Collections entered in the contest are exhibited each spring in the General Library. The prizes are awarded on the basis of the student's collection, a personal interview to determine the overall planning and objectives of his collecting activity, and his familiarity with his own books and the general field of his collecting interest.

The William T. Laprade Prize in History. This prize is offered in honor of William T. Laprade, who was a member of the History Department at Trinity College and Duke University from 1909 to 1953, and Chairman of the Department from 1938 to 1952. It is awarded to that senior who is graduating with distinction and whose senior essay in history has been judged unusually meritorious.

The Donald E. Spofford Medal. This medal is presented to the most outstanding member of the Men's Student Government Association.

The Horace F. Inman Award. This award is made to the fraternity, freshman, and independent dormitory which throughout the year demonstrates the best qualities in citizenship.

The James A. Oliver Memorial Award. This award was established in 1963 by the family of James A. Oliver with the cooperation of Delta Mu Tau, Duke student music honorary fraternity, is given to the student or students who have done the most to further the interest of music at Duke Universty. A prize of up to $350.00 is awarded annually.

University Registrations and Regulations

Registrations

Preregistration

Each new student receives a copy of the *Academic Guide for Freshmen* in the summer and submits a trial course program for his first semester. All other students preregister for a given semester in the fall or spring of the year on the basis of information and advising available to them. Evidence that the counting preregistration deposit of twenty-five dollars has been paid (See pages 37-38 for detailed information) must be submitted at the time of spring preregistration. A student's tentative course program is filed for permanent record in the Central Records Office after each preregistration. He may complete his registration by mail. Students who preregister in either semester at a date later than that specified in the calendar of the colleges are subject to a penalty of $10.00, payable to the Treasurer. Students who do not preregister within an allotted time must be readmitted to the college by application to the Director of Admissions.

Semester Opening and Registration

Each preregistered undergraduate student is required to return to the University each semester on registration day and to report to his college

office by 6 p.m. Ample time should be allowed since failure to report entails loss of the continuing registration deposit and of registration in each class for which one is preregistered. An official enrollment is required for admission to any class.

After preregistration, course changes may be made on registration day or during the first week of classes. Changes in courses for reasons not arising within the University entail a fee of $1.00.

Academic Regulations

Course Requirements

During each semester of the regular academic year, the academic program of an undergraduate student normally consists of four or five courses totaling fourteen to seventeen semester hours (Trinity and The Woman's College), or fifteen to seventeen semester hours (School of Engineering), in either case exclusive of physical education. An absolute maximum program of nineteen semester hours, exclusive of physical education, has been fixed, since the University is committed to quality work and education that is not exclusively course centered. No student is allowed to take fewer than fourteen semester hours of work without special permission from the appropriate dean or to take more than the normal load of work unless his average grade in the preceding semester is higher than a C.

Prior to preregistration in the second semester of his sophomore year, each student is required to choose his major field and confer with his departmental adviser about the requirements for major and related work.

Special permission of the Director of Undergraduate Studies in the student's major department and the approval of his dean are required for a senior to elect for credit toward graduation any course open primarily to freshmen. Juniors require similar approval to take more than one such course. In courses numbered 200-299 which carry graduate credit, a junior must have at the time of registration written approval of the instructor of the course and that of the Director of Graduate Studies of the appropriate department. These courses are not open to freshmen or sophomores.

Course Audit

With the written consent of the instructor, a full-time, degree student is allowed to audit one or more courses in addition to the normal program. With the consent of the appropriate instructor and the Registrar, alumni may audit undergraduate courses at the usual auditing fee. After the first

week of classes in any semester, no student classified as an auditor in a particular course may take the course for credit, and no student taking a particular course for credit may change classification to an auditor. A student may not repeat for credit any course he has previously audited. Auditors submit no daily work, take no examinations, and receive no credit for courses.

Course Changes

New courses may not be elected later than one week after the opening of classes during the semester. Procedures for withdrawal from a course are determined by each of the undergraduate colleges, but in any instance permission of an academic dean is required.

Attendance Regulations

The attendance regulations specifically place the responsibility for class attendance upon the individual student. *He is expected to attend classes regularly and punctually.* A student should recognize that one of the most vital aspects of a residential college experience is attendance in the classroom and that the value of this academic experience cannot be fully measured by testing procedures alone.

The members of the student body are considered sufficiently mature to appreciate the necessity of regular attendance, to accept this personal responsibility, and to demonstrate the kind of self-discipline essential for such performance and, conversely, to recognize and accept the consequences of failure to attend. An instructor is privileged to refer to the dean of the appropriate college for suitable action students who in his opinion are causing their work or that of the class to suffer because of absences or latenesses.

Absences from tests and required classes due to illness will be excused when certified by a proper medical official. Absences due to authorized representation of the University may be excused. Officials in charge of groups representing the University are required to submit names of those persons to be excused to the appropriate dean's office forty-eight hours before their absences are to commence.

Leave of Absence

An upperclassman in good standing may apply in writing to his dean for approval to take a leave of absence. If granted, the leave will begin at the end of the semester in which application is made and will last for one or two semesters. While on leave a student must inform his dean of his address and preregister by mail for the semester he is due to return. A student failing to preregister will be considered to have withdrawn from the University and will have to apply for readmission.

Regulations for Participation in Athletics and Other Activities

Members of athletic teams or other student groups engaging in public representation of the University are expected to be carrying their current work satisfactorily. Students may be barred from participation in such representation if, in the opinion of the dean of their college, they fail to meet this requirement.

Grading

Final grades on performance in academic work are sent to students and parents, or guardians, after the examinations at the end of each semester. In addition six-weeks advisory grade reports for freshmen are mailed each semester. Grade symbols are:

Passing. Passing grades are A, exceptional; B, superior; C, average; and D, low pass. A passing grade may be modified by a plus (+) or a minus (−).

Failing. A grade of F indicates that the student has failed the course and that in order to receive credit for the course he must reregister for the course and repeat the work in class.

Pass-Fail Option for Elective Courses. With the consent of the instructor, a third or fourth year student may choose to be graded on a pass-fail basis in one free elective course each semester. A student accepted on this basis completes all the work of the course but receives either a pass (P) or fail (U) grade in lieu of a standard grade. The credit hours earned apply only in the total cumulative average (see p. 53), as do transfer and Advanced Placement credits. For that reason they are weighted as C's toward the required senior C average. A pass grade may not subsequently be converted to a regular letter grade nor may the course be retaken on a regular credit basis. After the first week of classes in any semester, no student classified as pass-fail in a particular course may change to regular registration and no student in regular registration may change classification to pass-fail.

Absence from the final examination. In all cases in which the student is absent from a final examination, he receives an X instead of a final grade. If he does not present an acceptable explanation for his absence to the appropriate Dean's office within forty-eight hours after the scheduled time for the examination, the X is converted to an F. If the absence is excused, the student arranges with his dean and the instructor for a make-up examination. An X not cleared by the end of the semester following the examination missed is converted to an F.

Incomplete work. If because of illness or other emergency a student's work in a course is incomplete, he may receive an I for the course instead of a final grade. Incomplete courses must be completed before the close

of the succeeding semester; otherwise, the I is converted to an F and the course must be retaken if the student is to receive credit for it. In case a student whose work is incomplete is also absent from the final examination, he receives an X for the course.

Withdrawal. The letter "W" is used to indicate official withdrawal from a course. If a student drops a course without the permission of his dean, a grade of F is recorded. If he drops with permission a course in which he is failing, the grade for that course is recorded as an F unless in the judgment of the Dean, circumstances do not require this penalty but permit a notation of a W to indicate official withdrawal.

Credits

The unit of credit used is the semester hour, which signifies one class period a week throughout the semester. Two or three hours of laboratory work are equivalent to one hour of class work.

Seniors who at the beginning of a semester lack no more than nine hours for the fulfillment of the requirements for the A.B. or B.S. degree may enroll, with permission of the Dean of the Graduate School, in graduate courses for a maximum total program of fifteen semester hours.

Advanced Placement Course Credit

Any student who has earned a score of three or higher on an Advanced Placement examination of the CEEB and is approved for placement in a sophomore-level course or above may be considered for course credit in appropriate subjects. (See p. 28). For those presenting scores of four or five the award of credit will be made automatically upon matriculation; for those presenting scores of three it will be determined with the approval of the University department concerned no earlier than at the end of the first semester. Course credit may be granted for one or two semesters in each subject area in which examination is offered in the Advanced Placement Program.

Transfer Credit

Transfer credit is evaluated from regionally accredited, degree-granting institutions. Courses taken away from Duke in which grades of less than C have been earned are not acceptable for transfer credit. Credit for work completed at other institutions will be determined in relation to the curriculum requirements of the college in which the student enrolls at Duke.

Credit for courses in science, mathematics, or foreign language offered for advanced standing in any of the undergraduate colleges by a transfer student from a junior college will be evaluated by the departments concerned.

The maximum amount of credit acceptable from a junior college is sixty semester hours, exclusive of physical education. No credit is given for work completed by correspondence, and credit for no more than six semester hours is allowed for extension courses.

Residence Requirements

Ordinarily, the final four semesters—or equivalent—of work must be earned at Duke except in those instances in which a student has been approved to take his junior year abroad or been granted a leave of absence. (For engineering students, thirty of these sixty semester hours must be from those normally taken in the senior year.) Students who meet this requirement but who still lack six to eight semester hours in final fulfillment of requirements may take this work in another institution of approved standing, provided the course is approved by the Chairman of their major department and by the Dean.

In the case of women six or more years out of The Woman's College, up to 30 hours of work may be taken in another institution of approved standing in final fulfillment of requirements providing that (1) she was in good standing when she withdrew from Duke; (2) she proposes *in advance* a plan which ensures that the work to be taken elsewhere will be comparable to the work required at Duke; (3) she demonstrates that a return to Duke to complete the work for the degree would be either impossible or occasion serious hardship; and (4) she is prepared to take Duke examinations on any courses taken elsewhere if required by the department concerned.

Quality Points and Class Standing

An overall indication of the quality of student performance is provided by assigning quality points per semester hours of a course as follows:

Grade	*Quality Points*	*Grade*	*Quality Points*
A+	4.0	C+	2.3
A	4.0	C	2.0
A—	3.7	C—	1.7
B+	3.3	D+	1.3
B	3.0	D	1.0
B—	2.7	D—	1.0
		F	0

On the basis of these points two averages are maintained for students, one a Duke cumulative average (determined by dividing the number of quality points earned at Duke by the total number of hours carried at Duke—not semester hours passed), the other a total cumulative average. The latter also includes credit assigned to work transferred from other

institutions, credit assigned to the successful completion of elective courses under the pass-fail option, and that given in recognition of successful advanced placement (see p. 52). In order to carry forward such credit, two quality points are assigned per semester hour. No grade is entered on a student's permanent record in the case of transfer credit or APP credit. All honors at Duke are determined on the basis of the Duke cumulative average; however, the total cumulative average is the basis for determining whether continuation and graduation requirements have been met.

Trinity College and The Woman's College

In Trinity College or the Woman's College a student must achieve at least the following credits and q.p.r.'s for continuation from

The first to the second year	18 s.h. credit and a q.p.r. of 1.30
The second to the third year	42 s.h. credit and a q.p.r. of 1.60
The third to the fourth year	66 s.h. credit and a q.p.r. of 1.70
The fourth to the fifth year (if needed)	90 s.h. credit and a q.p.r. of 1.80

While the meeting of these requirements does not guarantee continuance in College, it represents the absolute minimum in the absence of which no student will be permitted to remain.

Freshmen must also pass at least six semester hours of work in their first semester, nine semester hours in the second semester, and eighteen semester hours in their first year; all other students must pass at least nine semester hours each semester. Physical education credits are excluded in each case.

Senior Class Privileges. Students who have completed 90 or more semester hours of work and have attained a quality point ratio of at least 1.80 are eligible for privileges normally accorded seniors.

Requirements for Graduation. In addition to a completion of an approved curriculum a student must meet at least the following minimum requirements: 124 semester hours with 248 quality points and a q.p.r. of 1.90. The work of the senior year must also average at least a C (2.00).

School of Engineering

A student in the School of Engineering matriculating after September 1, 1965, must achieve at least the following for continuation from

The first to the second year	18 s.h. credit and a q.p.r. of 1.30
The second to the third year	46 s.h. credit and a q.p.r. of 1.60
The third to the fourth year	74 s.h. credit.and a q.p.r. of 1.70
The fourth to the fifth year (if needed)	102 s.h. credit and a q.p.r. of 1.80

Freshmen must also pass at least six semester hours of work in their first semester, three required courses in the second semester, and eighteen

semester hours in the first year; all other students must pass at least nine semester hours each semester. Physical education credits are excluded in each case.

Senior Class Privileges. Students completing ninety-six or more semester hours of work including certain specially designated junior courses are eligible for privileges normally accorded seniors.

Requirements for Graduation. For graduation from the School of Engineering in addition to completion of an approved curriculum, a student matriculating after September 1, 1965, must meet at least the following minimum requirements: the completion of 134 semester hours; a cumulative q.p.r. of 1.90; and a q.p.r. of 2.0 in all work, as well as in all engineering work, taken after having attained senior standing.

Commencement

Degrees are awarded in June at commencement to those who have completed requirements at the end of either regular semester of the academic year. They are awarded at the end of the summer to students who complete degree requirements in a summer session.

Eligibility for Academic Honors

Dean's List. In recognition of academic achievement, students who earn an average quality point ratio of 3.0 or higher on a semester's work of not less than the minimum academic load are placed on the Dean's List.

Class Scholars. The five students in each combined undergraduate class of the University (including Trinity College, The Woman's College, and the School of Engineering) who achieve the highest quality point ratio on at least a normal course load for each academic year shall be designated Class Scholars.

Class Honors. To be eligible for Class Honors a student must earn, during the year, credit for at least the minimum academic load permitted by the college in which he is registered. Students in the freshman, sophomore, and junior classes who earn a 3.50 quality point ratio on all work for the year are eligible for Class Honors.

Graduation Honors. To be eligible for consideration for Graduation Honors a student must have completed in residence a minimum of ninety semester hours. Students who earn an average of at least a quality point ratio of 3.50 are recommended for a degree *magna cum laude*. Those who earn a quality point ratio of 3.75 are recommended for a degree *summa cum laude*.

Eligibility for Special Curricular Programs

Special Courses, Special Sections, and Tutorials for Entering Freshmen and Sophomores. Special introductory courses and special sections of introductory courses are offered to qualified entering freshmen and sophomores on a pass-fail basis. One-credit-hour tutorials are available to accompany regular introductory courses. Special sections are designated by the letter *X*; special courses, by the numbers 41, 42; tutorials, by 43, 44. In general, special sections presume background and competence in the given area of study. Tutorials, on the other hand, presume special interest and desire for additional involvement in an intellectual activity, but no special background or competence.

Reading-out of Introductory Courses. The option to "read" in order to bypass introductory or prerequisite courses is open to students of demonstrated academic ability to allow them to advance at their own pace to upper-level work. This opportunity ensures a richer program for the student who has few places in his curriculum for electives. Any student interested in reading during the summer to bypass an introductory or prerequisite course must be recommended by his dean and secure the permission of the department concerned. Reading for a course and auditing are mutually exclusive procedures. A proposed program of reading should be approved by the director of undergraduate studies in the department in which the work will be done. On passing a three-hour qualifying examination prepared by the department a student may be certified for advanced course work in the area. On completion of an advanced course, an entry will be made on his permanent record that he has passed a qualifying examination but no course credit is awarded. Interested students should request further information from their respective dean's offices.

Independent Study. Upon the recommendation of the department involved, students may be permitted to enroll for independent study during their junior and senior years. The courses, numbered 191, 192 and 193, 194, are designed to permit students to pursue individual research and reading in a field of special interest subject to the supervision of a member of the staff. A student need not be in a Graduation with Distinction program to enroll in independent study courses. The maximum credit allowed for independent study and honors research courses is three semester hours per semester during the junior year and six semester hours per semester during the senior year. Interested students should consult the Director of Undergraduate Studies in the department in which they wish to work.

Graduation with Distinction. Programs featuring independent study and other honors opportunities are available under the title Graduation with Distinction in the majority of the academic departments. Although the details and requirements of the program vary from department to

department, certain general requirements are uniform. Students are invited to participate by the department at the end of the junior year. A "B" average is normally required for entrance to the Program, but students may be included who do not have a "B" average when admitted. They must, however, achieve a "B" average in their major department and an over-all "B" average by the time of graduation to be eligible. After participation in a senior seminar, and/or a directed course of reading, laboratory research, or other independent study, the student must embody the results of his individual research and study in a distinguished piece of writing. The paper is assessed by a departmental committee which, if it approves, recommends that the student be graduated with distinction in his major field. Interested students should consult the Director of Undergraduate Studies in the appropriate department.

Distinguished Professor Seminars. Interdisciplinary one-semester seminars of restricted enrollment offered to upperclassmen will be led by senior members of the faculty, usually holders of named chairs. Professors and topics are announced under the title University Courses. (See page 182.) Because of their scope, the seminars lie outside any particular major though a department may, at its discretion, accept one or more of them as related work. Each carries three semester hours credit.

Juniors and seniors with overall averages of at least 2.75 who meet prerequisites listed for particular seminars may apply for a seminar through the dean of their college. Preference is given to juniors and to those not enrolled in a senior honors seminar. The selection of seminar groups is made by the moderators.

Conduct of Students

Duke University expects and will require of all its students continuing loyal cooperation in developing and maintaining high standards of scholarship and conduct.

The University wishes to emphasize its policy that all students are subject to the rules and regulations of the University as currently in effect or from time to time put into effect by the appropriate authorities of the University.

Any student, in accepting admission, indicates his willingness to subscribe to and be governed by these rules and regulations and acknowledges the right of the University to take such disciplinary action, including suspension and/or expulsion, as may be deemed appropriate, for failure to abide by such rules and regulations or for conduct adjudged unsatisfactory or detrimental to the University.

Student should also refer to the following *Bulletins: Information and Regulations, Trinity College/The School of Engineering,* and *Information and Regulations, The Woman's College*

The Summer Session

The summer session at Duke University makes available to Duke undergraduate students and to undergraduates from other universities and colleges a notable program of instruction in many fields of knowledge, both academic and professional.

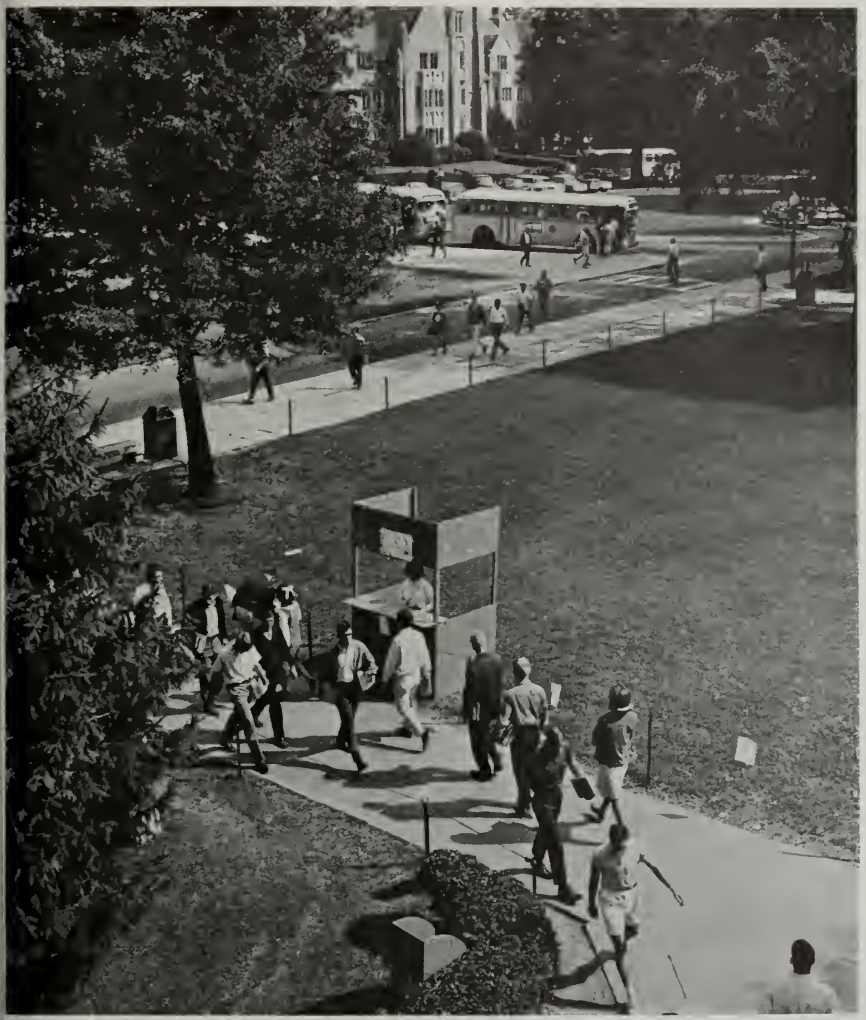
Undergraduates in Duke University who desire to accelerate their programs may complete the work for a degree in three years by attending two or more summer sessions.

Undergraduates from other colleges and universities may enjoy the special advantages of summer instruction at Duke and transfer their earned credits to their own institutions.

The Summer Session of 1969 will include two terms: Term I, June 10 to July 16; Term II, July 18 to August 23. By attending both terms it is possible for a student to earn as many as twelve semester hours of credit.

Instruction of interest to undergraduates will be offered in the summer of 1969 in the following departments and schools: Botany; Chemistry; Economics; Business Administration; Education; Nursing; Engineering; English; Forestry; French; Geology; German; Greek; Health and Physical Education; History; Latin and Roman Studies; Mathematics; Philosophy; Physics; Political Science, Psychology; Religion; Slavic Languages and Literatures; Sociology; Spanish; and Zoology.

Distinctive features of Summer Session instruction are provided by the program in marine biology offered at the Duke Marine Laboratory, Beaufort, North Carolina, and by various conferences in several of the departments.



While the basic purpose of the Summer Session is to serve the academic and the professional requirements of those who are interested in their own educational advancement, the University recognizes the need of, and provides for, a varied recreation program, both athletic and social.

Undergraduates of Duke University, both men and women, who plan to attend the Summer Session should enroll with the dean of their own college in Duke University. Undergraduates in other universities or colleges who seek transfer credits should apply directly to the Director of the Summer Session, Duke University, Durham, North Carolina.

Courses of Instruction

Note. Courses primarily for freshmen are numbered from 1 to 49; those primarily for sophomores are numbered from 50 to 99; those primarily for juniors and seniors from 100 to 199; those primarily for seniors and graduates from 200 to 299. The amount of credit for each course is given in semester hours following the description of the course.

Odd-numbered courses are usually offered in the fall semester; even-numbered courses in the spring semester. *For courses which will be offered in 1969-70, consult the Official Schedule of Courses available to enrolled students in the Registrar's Office.*

Double numbers separated by a hyphen indicate that the course is a year-course and must normally be continued throughout the year if credit is received. A student must secure written permission from the instructor in order to receive credit for either semester of a year-course. Double numbers separated by a comma indicate that although the course is a year course, credit may be received for either semester without special permission.

Air Force Aerospace Studies

Professor Stanley, Lt. Colonel, USAF, *Chairman*; Associate Professor Thompson, Major, USAF, *Director of Undergraduate Studies,* Assistant Professor Canterbury, Captain, USAF, *Commandant of Cadets*

Eligibility Requirements. Freshmen enrolled in Trinity College and the School of Engineering are eligible to enroll in the General Military Course in the Air Force ROTC. For enrollment in the Professional Officer Course the student must have successfully completed either the General Military Course or the six weeks Field Training Course; must execute a written agreement with the government to complete the Professional Officer Course; must be sworn into the Enlisted Reserve; and he must agree to accept a commission in the United States Air Force Reserve upon graduation.

Deposit Required. Each student must make a deposit of twenty dollars with the University Treasurer to insure return of all Government Property.

Course of Study. The course of study of AFROTC is composed of courses in the Department of Air Force Aerospace Studies. In addition to classroom instruction, the Air Force requires Leadership Laboratory each semester.

General Military Courses

First Year

AS 1. *Leadership Laboratory.*
AS 2. *Defense of the United States.* 2 s.h. *Canterbury*

Second Year

AS 51. *Word Military Systems.* 2 s.h. *Canterbury*
AS 52. *Leadership Laboratory.*

Professional Officer Courses

All students selected to continue Aerospace Studies pursue:

First Year

AS 101, 102. *Growth and Development of Aerospace Power.* 6 s.h. *Stanley*

Second Year

AS 203. *The Problems of Flight and the Aerospace Sciences of Weather and Navigation.* 2 s.h. *Thompson*
AS 205, 206. *The Professional Officer.* 6 s.h. *Thompson*

Art

Professor Heckscher, *Chairman*; Professor Mueller, *Acting Director of Undergraduate Studies*; Professors Hall, Markman, and Patrick; Adjunct Professor Bier; Associate Professors Sunderland and Jenkins; Assistant

Professor Moeller, *Director of the Duke University Art Museum*; Lecturers Langedijk, Meyvaert, and Stars; Instructors Pratt, van Dijk; Visiting Instructor Thompson

Aesthetics

121. *The Principles of Art Criticism.* 3 s.h. *Patrick*
221-222. *History of Aesthetics.* 6 s.h. *Patrick*

History of Art

51-52. *Introduction to Art History.* 6 s.h. *Staff*
119. *Fine Arts Photography Lab.* 2 s.h. *van Dijk*
131. *Art and Archaeology of the Hellenic World.* 3 s.h. *Markman*
132. *Roman Art and Archaeology.* 3 s.h. *Markman*
133. *Mediaeval Architecture.* 3 s.h. *Sunderland*
134. *Mediaeval Painting and Sculpture.* 3 s.h. *Sunderland*
135, 136. *Art of Northern Europe in the Fifteenth and Sixteenth Centuries.* 6 s.h. *Mueller*
137, 138. *Italian Renaissance Art.* 6 s.h. *Jenkins*
140. *Seventeenth Century Painting and Sculpture in Europe.* 3 s.h. *Jenkins*
141. *American Art.* 3 s.h. *Patrick*
143. *The History of Prints and Drawings.* 3 s.h. *Mueller*
144. *Renaissance and Baroque Architecture.* 3 s.h. *Sunderland*
145-146. *The Rise of Contemporary Architecture.* 6 s.h. *Hall*
147. *Painting and Sculpture in the Eighteenth and Nineteenth Centuries.* 3 s.h. *Sunderland*
148. *Modern Painting and Sculpture.* 3 s.h. *Patrick*
191, 192. *Independent Study.* Open only to qualified students in the junior year by permission of the Department. 6 s.h.
193, 194. *Independent Study.* Open only to qualified students in the senior year by permission of the Department. 6 s.h.

For Seniors and Graduates

217. *Aegean Art.* 3 s.h. *Markman*
218. *Early Greek Art.* 3 s.h. *Markman*
233. *Early Mediaeval Architecture.* 3 s.h. *Sunderland*
234. *Romanesque Sculpture.* 3 s.h. *Sunderland*
239. *Architecture of Britain.* 3 s.h. *Hall*
240. *Architecture of North America.* 3 s.h. *Hall*
241-242. *Latin American Art.* 6 s.h. *Markman*
243. *The Art of the Illuminated Manuscript.* 3 s.h. *Meyvaert*
249. *Pre-Columbian Art.* 3 s.h. *Markman*
251-252. *Research.* Open to seniors by permission of the director of undergraduate studies. 6 s.h. *Heckscher*

292. *Research Problems in the Collections of the North Carolina Museum of Art.* Permission of the director of undergraduate studies required. 3 s.h. *Bier*

Design

Students other than art majors may receive not more than eight semester hours credit for work in studio courses. For any number of semester hours of credit in studio courses an equal number of hours must be taken in History and Criticism.

53-54. *Beginning Studio.* Prerequisite: consent of the instructor. 4 s.h. *Pratt*

55, 56. *Painting.* Prerequisite: Art 53-54 and consent of the instructor. 4 s.h. *Pratt*

155, 156. *Advanced Drawing and Color.* Prerequisite: Art 53-54. 4 s.h. *Pratt*

157, 158. *Advanced Painting.* Prerequisite: Art 55, 56. 4 s.h. *Pratt*

159-160. *Printmaking.* Prerequisite: Art 53-54. 4 s.h. *Mueller, Thompson*

Departmental Major in Art

Prerequisite. Introduction to Art History (1-2 or 51-52); or, with the approval of the Director of Undergraduate Studies, equivalent hours in 100 level courses which form a background for the History of Art.

Major Requirements. The student will select in consultation with the departmental adviser a sequence of courses emphasizing either the History of Art or Design.

a. History of Art: 24 semester hours from 100 and 200 level courses distributed over the entire field of Art History, with a concentration of courses in at least two areas.

b. Design: 22 semester hours, of which 16 must be in Design and 6 from courses in the History of Art and Theory.

Related Work. 18 semester hours elected from courses in aesthetics, anthropology, English, German, classical studies, history, history of music, history of religion, linguistics, philosophy, psychology, romance languages, and sociology.

The Department offers work leading to graduation with distinction. See the Section on honors in this *Bulletin.*

Studio Fees. A fee of $20.00 per semester will be required in all studio courses to cover materials used in each course. The fee is payable upon notification from the Treasurer's Office at the beginning of each semester.

Asian and African Languages

Chinese

131, 132. *Intensive Elementary Chinese.* 8 s.h. *Chang*
133, 134. *Intensive Intermediate Chinese.* 8 s.h. *Chang*

Hindi-Urdu

171, 172. *Modern Indian Literature.* 6 s.h. (Not offered in 1969-70.) *Staff*
181, 182. *Intensive Elementary Hindi-Urdu.* 8 s.h. *Apte*
183, 184. *Intensive Intermediate Hindi-Urdu.* Prerequisite: elementary Hindi-Urdu. 8 s.h. *Ullrich*
185, 186. *Advanced Hindi Reading and Composition.* Prerequisite: Hindi-Urdu 183, 184 or equivalent. 6 s.h. *Ullrich or staff*
200, 201. *Special Studies in South Asian Languages.* Prerequisite: consent of the instructor. 6 s.h. *Staff*

These courses are offered as an enrichment program for students interested in the South Asian subcontinent and may be taken as general electives by advanced undergraduate students. No major work is offered in Hindi-Urdu.

Japanese

151, 152. *Intensive Elementary Japanese.* 8 s.h. *Chang*
153, 154. *Intensive Intermediate Japanese.* 8 s.h. *Chang*

Swahili

101, 102. *Elementary Swahili.* 6 s.h. *Bell*

Biology

11-12. (P) *An Introduction to Biological Diversity.* 6 s.h. *Stone, Searles, and Staff*

See other courses listed under Botany and Zoology.

Botany

Professor Johnson, *Chairman*; Associate Professor White, *Director of Undergraduate Studies*; Associate Professor Stone and Associate Professor White, *Supervisors of Freshman Instruction*; Professors Anderson, Billings, Hellmers, Kramer, Naylor, and Perry; Associate Professors Culberson, Philpott, and Wilbur; Assistant Professors Boynton and Searles

11-12. *An Introduction to Biological Diversity.* (See Biology 11-12.)

52. *Plant Identification.* 4 s.h. *Wilbur*

53. *Introductory Oceanography.* Prerequisite: one year of a laboratory science or concurrent enrollment in a laboratory science. (Also listed as Geology 53.) 3 s.h. *Pilkey* (Geology) *and Searles*

55. *Plant Anatomy.* Prerequisite: one year of biology or permission of instructor. 4 s.h. *White*

101. *Principles of Heredity.* Prerequisite: one (high school or college) course in biology, botany, or zoology. High school algebra or one year of college mathematics recommended. 3 s.h. (without laboratory) or 4 s.h. *Perry*

103. *General Bacteriology.* Prerequisite: one year of biology or chemistry or equivalent. 4 s.h. *Johnson*

105. *Plant Diversity.* Prerequisite: one year of biology. 4 s.h. *Culberson*

151. *Introductory Plant Physiology.* Prerequisites: Biology 1-2 or equivalent; one year of chemistry. 3 s.h. *Hellmers and Kramer*

156. *Plant Ecology.* Prerequisites: Biology 1-2 and Botany 52, or equivalent. 4 s.h. *Billings*

180. *Principles of Genetics.* Prerequisites: introductory courses in biology, chemistry, and mathematics or equivalent. (Also listed as Botany 280, Zoology 180, and Zoology 280.) 3 s.h. *Boynton and Gillham*

182. *Principles of Genetics Laboratory.* May only be taken with Botany 180 or by consent of the instructor. (Also listed as Zoology 182.) 1 s.h. *Boynton and Gillham*

191, 192, 193, 194. *Independent Study.* Open only to highly qualified students in the junior and senior years by permission of the Department. 6 s.h.

209. *Lichenology.* 3 s.h. *Culberson*

210. *Bryology.* 3 s.h. *Anderson*

212. *Phycology.* 4 s.h. *Searles*

221. *Mycology.* Prerequisite: one year of biological science. 4 s.h. *Johnson*

225, 226. *Special Problems.* Students with adequate training may do special work in the following fields:

1. *Mycology. Johnson*
2. *Cytology. Anderson*
3. *Ecology Billings*
4. *Genetics. Boynton and Perry*
5. *Morphology and Anatomy of Vascular Plants. Philpott and White*
6. *Bryology. Anderson and Bryan*
7. *Physiology. Hellmers, Kramer and Naylor*
8. *Taxonomy of Vascular Plants. Stone and Wilbur*
9. *Bacteriology. Johnson*
10. *Lichenology. Culberson*
11. *Phycology. Searles*

240. *Evolution.* Prerequisites: introductory biology and genetics, or consent of instructors. Cytology recommended. 3 s.h. *Klopfer* (Zoology) *and Stone*

243. *Cytology.* Prerequisite: one year of botany or zoology. (Also listed as Zoology 243.) 4 s.h. *Anderson and Nicklas* (Zoology)

250. *Plant Biosystematics.* Prerequisites: Botany 52 and 55 and either 243 or a course in genetics or their equivalents. 4 s.h. *Stone and White*

252. *Plant Metabolism.* Prerequisite: Botany 151 or equivalent; organic chemistry recommended. 4 s.h. *Naylor*

254. *Plant Water Relations.* Prerequisite: Botany 151 or equivalent. 3 s.h. *Kramer*

255. *Plant Systematics.* Prerequisite: Botany 52 or equivalent. 4 s.h. *Wilbur*

256. *Community Analysis and Classification.* Prerequisite: Botany 156 or equivalent. 3 s.h. *Staff*

257. *Principles of Plant Distribution.* Prerequisite: Botany 156 or equivalent. 3 s.h. *Billings*

258. *Physiology of Growth and Development.* Prerequisite: Botany 151 or equivalent; organic chemistry recommended. 4 s.h. *Naylor*

259. *The Environment.* Prerequisite: Botany 156 or equivalent. 3 s.h. *Billings*

Marine Laboratory. Botany 211, *Marine Phycology*, and 207, *Marine Mycology*, are given alternate years at the Duke University Marine Laboratory, Beaufort, N. C.; Botany 220, *Coastal Field Botany*, is offered biennially. Consult the *Bulletin of the Marine Laboratory.*

Departmental Major

Prerequisites. Biology 1 and 2.

Major Requirements. A minimum of 24 hours (A.B. and B.S.) of work beyond Biology 1 and 2, including at least four of the following courses: Botany 52, 55, 105, 101, 151, and 156. The remaining hours may be selected from these and any other courses in the Department for which the student is eligible, subject to approval of the Director of Undergraduate Studies.

Related Work. Courses in at least two natural science departments sufficient to total, with major work, 42 s.h. (A.B.) or 48 s.h. (B.S.)

For interdisciplinary programs in biology, see page 11 of this *Bulletin.*

Business Administration

Professor Volpp, *Chairman*; Professor Dickens, *Director of Undergraduate Studies*; Professors Black, Joerg, Keller; Associate Professor Baligh, Dellinger, Pondy; Assistant Professor Laughhunn; Instructors (part-time) Boyd, Coole, Dunlap, McMillan, Shannon

The courses offered by the Department of Business Administration stress conceptual understanding of and analytical reasoning related to problems faced by modern business management.

The Department offers sufficient work for those students who wish to qualify for admission to the Certified Public Accountants' Examination.

59. *Managerial Accounting.* Prerequisite: Economics 52. (Not open to students who have taken BA 57, 58.) 4 s.h.

101. *Managerial Economics.* Prerequisite: Bus. Adm. 138. 3 s.h.

138. *Business Statistics.* Prerequisite: Mathematics 21. May be taken concurrently with Economics 52. 3 s.h.

143. *Corporation Finance.* Prerequisite: Bus. Adm. 171 and 101. 3 s.h.

144. *Investments.* Prerequisite: Bus. Adm. 143. 3 s.h.

147. *Production Management.* Prerequisite: Bus. Adm. 101 or Econ. 149. 3 s.h.

149. *Marketing.* Prerequisite: Bus. Adm. 101. 3 s.h.

171. *Accounting Theory.* Prerequisites: Bus. Adm. 59 and 101. 3 s.h.

172. *Corporate Accounts.* Prerequisite: Bus. Adm. 171. 3 s.h.

173. *Auditing, Theory and Practice.* Prerequisites: Bus. Adm. 171, 172 and permission of the department. 3 s.h.

177. *Income Tax Accounting.* Prerequisite: completion of or registration for Bus. Adm. 59. 3 s.h.

181. *Business Law.* 3 s.h.

184. *Commercial Law for Accountants.* Prerequisites: senior standing and permission of the instructor. 3 s.h.

185. *Business Administrative Organization.* Prerequisite: Bus. Adm. 101. 3 s.h.

189. *Introduction to Decision Theory.* Prerequisites: B.Adm. 138 or Economics 138, and B.Adm. 101 or Economics 149. 3 s.h.

190. *Quantitative Methods in Business.* 3 s.h.

191. *Independent Study.* Approval of the instructor and the Director of Undergraduate Studies required. 3 s.h. *Staff*

193, 194. *Independent Study.* Same as 191 but for seniors. 6 s.h. *Staff*

199. *Senior Seminar.* Permission of the department required. 3 s.h.

275. *Advanced Industrial Accounting and Management.* Prerequisites: Bus. Adm. 171, 172 and permission of the department. 3 s.h.

279. *Budgeting and Control.* Prerequisite: Bus. Adm. 171. 3 s.h.

291. *Business Policy.* Prerequisites: all Bus. Adm. requirements. 3 s.h.

295, 296. *Advanced Accounting Seminar: Theory and Practice.* Prerequisites: Bus. Adm. 171, 172 and permission of the department. *(Those who do not wish credit may take Bus. Adm. 295, 296 for $25.00 per semester.)* 6 s.h.

Departmental Major

The Department of Business Administration offers specialization in two areas—accounting and business administration. Each program requires that the student take the same prerequisite courses in the Freshman and Sophomore years.

Prerequisites required of all majors in the Department. Mathematics 21; Economics 1 or 51 and 52; Business Administration 59, 101, and 138.

Business Administration

Required courses. Four courses from the following list: Business Administration 143, 147, 149, 171, 185, 189, 190, 291.

Accounting

Required courses: Business Administration 171, 172, 173, 275.

Related Work. 18 s.h. Departments in which related work is usually taken: Mathematics, Economics, Sociology, Psychology, Political Science, History. In special cases courses taken in other departments may be counted as related work with the approval of the Department.

The Department offers work leading to graduation with distinction. See the section on Honors. (For information about the Honors work, contact the Director of Undergraduate Studies.) The Department recommends majors for several scholarships designated by the donors for students majoring in business administration.

Chemistry

Professor Bradsher, *Chairman*; Associate Professor Bonk, *Director of Undergraduate Studies;* Professors Brown, Hobbs, Krigbaum, Poirier, Quin, Strobel, and Wilder; Associate Professors Chesnut, Jeffs, McPhail, Smith, Toren, and Wells; Assistant Professors Henkens, Palmer; and Assistants

1, 2. *General Inorganic Chemistry.* Prerequisite: qualification for Math 21. 8 s.h. *Bonk, staff, and Assistants*

41, 42. *Advanced General Chemistry.* Prerequisites: Mathematics 21 (may be taken concurrently) and permission of instructor. 8 s.h. *Strobel and Wilder*

61. *Physical Chemistry of Aqueous Solutions.* Prerequisites: Chemistry 1, 2 and Mathematics 21. 4 s.h. *Wilder, McPhail, Poirier, Toren, and assistants*

131. *Modern Chemical Analysis.* Prerequisites: Chemistry 160 or 161. 4 s.h. *Toren*

132. *Quantitative and Instrumental Analysis.* Prerequisites: Chemistry 161, 162, the latter half of which may be taken concurrently. 4 s.h. *Toren*

151, 152. *Organic Chemistry.* Prerequisite: Chemistry 42 or 61. Chemistry 151 is prerequisite for 152. 8 s.h. *Bradsher, Brown, Jeffs, Quin, and assistants*

155. *Qualitative Organic Analysis.* Prerequisite: Chemistry 152. 4 s.h. *Quin*

160. *Elements of Theoretical Chemistry.* Prerequisites: Chemistry 42 or 61, Physics 51-52, and Mathematics 22. 4 s.h. *Staff*

161, 162. *Physical Chemistry.* Prerequisites: Chemistry 42 or 61, Physics 51-52, and Mathematics 63. 8 s.h. *Hobbs and Krigbaum*

191, 192. *Independent Study.* Open only to highly qualified students by permission of the department. (See page 56.) It is recommended that students electing this course take Chemistry 271 in their junior year.

216. *Nuclear Chemistry.* Prerequisites: Chemistry 152 and Physics 51-52. 3 s.h. *Staff*

217. *Inorganic Chemistry.* Prerequisite: Chemistry 162 or the permission of the director of undergraduate studies. 3 s.h. *Wells and Palmer*

234. *Chemical Instrumentation.* Prerequisite: Chemistry 132, which may be taken concurrently, or an equivalent course. 3 s.h. *Strobel*

235. *Advanced Analytical Chemistry.* Prerequisite: Chemistry 132 and 162. 3 s.h. *Toren*

240. *Chemical Oceanography.* Prerequisites: Physics 51-52, Math 21-22, Chemistry 131 or 132 or 160 or 161, Zoology 215 or permission of instructor. 6 s.h. *Stefansson*

252. *Advanced Organic Preparations.* Prerequisite: Chemistry 152. 3 s.h. *Brown*

253. *Intermediate Organic Chemistry.* Prerequisite: Chemistry 152 and permission of the director of undergraduate studies. 3 s.h. *Quin and Wilder*

255. *Structural Analysis by Spectroscopic Methods.* Prerequisites: Chemistry 152 and permission of the director of undergraduate studies. 2 s.h. *Jeffs*

263. *Thermodynamics.* Prerequisites: Chemistry 162 and permission of the director of undergraduate studies. 3 s.h. *Krigbaum*

264. *Biophysical Chemistry.* Prerequisites: Chemistry 160 or 161. 3 s.h. *Henkens*

267. *Introductory Quantum Chemistry.* Prerequisites: Chemistry 162 and permission of the director of undergraduate studies. 3 s.h. *Chesnut*

271. *Introduction to Research.* 1 s.h. *Brown*

275-276. *Research.* Open to seniors by permission of the director of undergraduate studies. 1 to 3 s.h. *Staff*

281. *Laboratory in Organic Chemistry.* Prerequisites: Chemistry 152 and permission of the director of graduate studies. 2 s.h. *Quin*

282. *Remedial Laboratory in Analytical Chemistry.* By permission of director of undergraduate studies only. 1 s.h. *Toren*

Departmental Major

For the degree of A.B.

Prerequisites. Chemistry 1 and 2 (or 41), Mathematics 21, 22.

Major Requirements. 22 s.h., including Chemistry 61 (or 42), 131, 151, 152, and an additional 6 to 8 s.h., which may be satisfied by 161-162 or 160 together with 155 or 3 s.h. selected from 200-level courses in Chemistry.

Related Work. 20 s.h., including Physics 51-52 with the remainder usually in botany, geology, mathematics, physics or zoology.

For the degree of B.S.

Prerequisites. Chemistry 1 and 2 (or 41), Mathematics 21, 22, 63.

Major Requirements. Chemistry 61 (or 42), 132, 151, 152, 155, 161, 162, 217, and 3 s.h. selected from 200-level courses in Chemistry.

Related Work. 18 s.h., including Physics, 11 s.h. and Mathematics 51, or 68 or 131.

The language requirements must be satisfied by German 64 and either French 2 or Russian 2.

The department offers work leading to graduation with distinction. Consult the section on Honors and Prizes in this *Bulletin*.

Classical Studies

Professor Richardson, *Chairman*; Assistant Professor Stanley, ***Director of Undergraduate Studies***; Professors Newton, Truesdale, and Willis; Associate Professors Oates and Womble; Instructor Burian; Visiting Lecturer Birley.

**Courses marked with an asterisk will not be offered in 1969-70.*

Greek

1-2. *Elementary Greek.* 6 s.h. *Willis*

63-64. *Intermediate Greek.* 6 s.h. *Truesdale*

97, 98. *Sight Reading in Greek Prose.* Open to students who have completed one year of college Greek or the equivalent, with consent of the instructor. 2 s.h. *Truesdale*

*103. *Greek Historians.* 3 s.h. *Staff*

*104. *Greek Orators.* 3 s.h. *Staff*

105, 106. *Homer and the Greek Lyric.* 6 s.h. *Stanley*

*107, 108. *Greek Tragedy and Comedy.* 6 s.h.

117. *Greek Prose Composition.* 2 s.h. *Truesdale*

191, 192. *Independent Study.* Open only to highly qualified juniors and seniors. 6 s.h. *Staff*

For Seniors and Graduates

*203. *Homer.* 3 s.h. *Stanley*
*205. *Greek Lyric Poets.* 3 s.h. *Truesdale*
*206 *Aeschylus.* 3 sh. *Willis*
*208. *Sophocles.* 3 s.h. *Willis*
*209. *Euripides.* 3 s.h. *Stanley*
210. *Aristophanes.* 3 s.h. *Truesdale*
221. *Early Greek Prose.* 3 s.h. *Willis*
*222. *Thucydides.* 3 s.h. *Willis*
*223. *Greek Orators I.* 3 s.h.
*224. *Greek Orators II.* 3 s.h.
225. *Plato.* 3 s.h. *Burian*
*231. *Hellenistic Poetry.* 3 s.h. *Stanly*
*241. *Advanced Prose Composition.* 3 s.h. *Willis*

Latin

1-2. *Elementary Latin.* 8 s.h. *Staff*
63. *Intermediate Latin: Cicero.* Prerequisite: Latin 1-2 or the equivalent. 4 s.h. *Burian*
64. *Intermediate Latin: Vergil.* 4 s.h.
91, 92. *Latin Prose and Poetry.* 6 s.h. *Womble*
93. *Roman Comedy.* 3 s.h. *Richardson*
*94. *The Roman Novel.* 3 s.h. *Richardson*
*95. *Roman Stoicism.* 3 s.h.
*96. *Roman Epicureanism.* 3 s.h.
*97, 98. *Sight Reading in Classical, Mediaeval, and Renaissance Latin.* 2 s.h. *Staff*
*107. *Roman Elegy: Propertius and Tibulus.* 3 s.h. *Newton*
*108. *Ovid.* 3 s.h. *Womble*
109. *The Roman Historians: Caesar and Sallust.* 3 s.h. *Womble*
110. *The Roman Historians: Livy and Tacitus.* 3 s.h. *Womble*
117. *Latin Prose Composition.* 2 s.h. *Richardson*
191, 192. *Independent Study.* Open to highly qualified juniors and seniors. 6 s.h. *Staff*

For Seniors and Graduates

*201. *The Verse Treatise.* 3 s.h. *Newton*
*202. *Roman Satire.* 3 s.h. *Womble*
203. *Epic: Vergil.* 3 s.h. *Newton*
204. *Epic: Lucan and Statius.* 3 s.h. *Richardson*
*207. *The Prose Epistle.* 3 s.h. *Richardson*
*208. *The Epistle in Verse.* 3 s.h. *Womble*
*209. *Fragments of Early Latin.* 3 s.h. *Stanley*
*210. *Lyric and Occasional Poetry.* 3 s.h. *Womble*

*211. *Roman Oratory I.* 3 s.h. *Richardson*
*212. *Roman Oratory II.* 3 s.h. *Womble*
221. *Mediaeval Latin I.* 3 s.h. *Newton*
222. *Mediaeval Latin II.* 3 s.h. *Newton*
*241. *Advanced Latin Composition.* 1 s.h. *Richardson*

Classical Studies

Courses on the 100-level are open to juniors and seniors, and to qualified sophomores by permission of the instructor.

51. *Greek Literature in English Translation.* 3 s.h. *Burian*
52. *Latin Literature in English Translation.* 3 s.h. *Burian*
53. *Greek History.* 3 s.h. *Oates*
54. *Roman History.* 3 s.h. *Oates*
55. *Greek Art and Archaeology.* 3 s.h. *Stanley*
56. *Roman Art and Archaeology.* 3 s.h. *Stanley*
*111, 112. *Roman Literature in English Translation.* 6 s.h. *Womble*
*113. *Ancient Historians and Historiography.* 3 s.h.
114. *Greek Drama.* 3 s.h. *Staff*
115. *The Classical Tradition.* 3 s.h. *Staff*
*116. *Criticism of the Arts and Letters in Antiquity.* 3 s.h.
*117. *Ancient Mythographers.* 3 s.h.
*134. *The Athenian Empire.* 3 s.h. *Staff*
*135. *Alexander the Great.* 3 s.h. *Staff*
*136. *The Hellenistic Kingdoms.* 3 s.h.
*137. *The Roman Revolution.* 3 s.h.
*138. *The Decline and Fall of Rome.* 3 s.h.
143. *The Ancient Cities of Greece.* 3 s.h. *Richardson*
144. *Ancient Cities: Rome and Her Colonies.* 3 s.h. *Rchardson*

For Seniors and Graduates

231. *Greek Sculpture.* 3 s.h. *Stanley*
*232. *Greek Painting.* 3 s.h. *Stanley*
*235. *Roman Architecture.* 3 s.h. *Richardson*
236. *Roman Painting.* 3 s.h. *Richardson*
*253. *Greece to the Orientalizing Period.* 3 s.h.
*254. *The Age of the Tyrants and the Persian Wars.* 3 s.h.
*255. *The Age of Pericles.* 3 s.h. *Oates*
256. *The Fourth Century through Alexander.* 3 s.h. *Oates*
*260. *The History of Rome to 146 B.C.* 3 s.h.
*261. *The Roman Revolution, 146-30 B.C.* 3 s.h. *Staff*
*262. *Rome under the Julio-Claudians.* 3 s.h. *Staff*
*263. *From the Flavian Dynasty to the Severan.* 3 s.h.
270. *The Rise of the Hellenistic Kingdoms.* 3 s.h. *Oates*

Departmental Major in Greek

Prerequisite. Greek 1-2 or equivalent.

Major requirements. 24 semester hours in courses in Greek, to be selected from 63-64 and courses numbered above 100; at least 6 hours of work must be taken in courses at the 200-level. Students will be required to pass an examination testing proficiency in Greek prose composition or to complete Greek 117.

Related work. 18 semester hours, including at least 6 hours of Latin, and 12 hours of suitable courses in archaeology, ancient and mediaeval history, linguistics, French, German, or philosophy.

Departmental Major in Latin

Prerequisite. Latin 91, 92.

Major requirements. 24 semester hours in courses of Latin, which must include 12 semester hours in courses among those numbered 93-96 and those at the 100-level, and 12 semester hours in courses at the 200-level. Students will be required to pass an examination testing proficiency in Latin Composition or to complete Latin 117.

Related work. 18 semester hours, including at least 6 hours of Greek, and 12 hours of suitable courses in archaeology, ancient and mediaeval history, linguistics, French, German, or philosophy.

Majors in either Greek or Latin who contemplate graduate work are reminded of the necessity for competence in both languages for all higher degrees and of the requirement for a reading knowledge of French and German (usually an examination in one of these languages must be passed in the first year of graduate work and an examination in the other the second year).

Majors in Greek and Latin are eligible for nomination to a term of one semester during their junior year at the Intercollegiate Center for Classical Studies in Rome, of which Duke University is a founding member, at a cost comparable to that of a semester at Duke. Financial arrangements are made through the University, and students may apply for scholarship assistance. Courses in Greek, Latin, ancient history, and archaeology taken at the Center are counted toward the degree requirements of the Department of Classical Studies. For further information, see section on study abroad.

Graduates of Duke University may attend the American School of Classical Studies at Athens, Greece, without charge for tuition and are eligible to compete for the fellowships offered annually by the School. These consist of two fellowships in Greek archaeology and one in the language, literature, and history of ancient Greece, each with a stipend of $2,500.

They are awarded mainly on the basis of examinations held in the beginning of February of each year. A somewhat similar connection exists with the American Academy in Rome.

Comparative Literature

The courses in Comparative Literature may be taken as electives by advanced students; certain courses serve as related work in several departments (see the entries for related work under the separate departments).

No major is now offered in Comparative Literature. Students interested in the study of the interrelationships of literature as a part of their undergraduate program, or as preparation for graduate work, may consult Dr. Salinger.

191, 192. *Independent Study.* Open only to qualified students in the junior year, by permission. See p. 56. 6 s.h. *Salinger*

193, 194. *Independent Study.* Open only to qualified students in the senior year, by permission. See p. 56. 6 s.h. *Salinger*

201, 202. *Romanticism.* 6 s.h. *Salinger*

203, 204. *Realism and Symbolism.* 6 s.h. *Salinger*

205. *Foundations of Twentieth-Century European Literature.* 3 s.h. *Salinger*

For a description of the following courses see the departmental listing.

Readings in European Literature. (English 153, 154) *Clubbe*

Modern European Drama. (English 155) *Reardon*

Readings in Scandinavian Literature. (English 159) *Anderson*

The European Epic Tradition. (English 167, 168) *Knight*

Religious Values in Classical and European Literature. (Religion 187) *Kort*

Recent Literature and its Religious Implications. (Religion 188) *Kort*

Russian and Polish Romanticism. (Slavic Languages 236) *Krynski*

Economics

Professor Blackburn, *Chairman* (302 Social Science); Professor Vernon, *Director of Undergraduate Studies* (201A Social Science); Professors Davies, de Vyver, Goodwin, Hanna, Kreps, Naylor, Rottenberg, Saville, Smith, Spengler, and Yohe; Associate Professor Treml; Assistant Professors Black, Clark, Condos, Finger, Gillis, Hartley, and Reed

Economics courses aim to develop in the student the critical and analytical skills essential for understanding economic problems and institutions, in both their contemporary and in their historical setting. While no

particular vocational or professional goal is emphasized, these courses provide the academic background necessary for positions in industry, for work in many branches of government service, and for graduate study in economics and the social sciences.

Economics 1 or 51 and 2 or 52 are recommended to all students planning to elect further courses in the department.

Students planning to do graduate work in Economics are advised to take as many of the following courses in mathematics as their schedules permit. These courses are listed in preferential order.

Mathematics 21, 22, 51, 63, 68, 131, and 135-136.

1. *Introduction to Economic Problems and Policies.* (Open only to Freshmen.) 3 s.h. *Staff*

2. *The Evolution of Economic Ideas.* (Open only to Freshmen.) 3 s.h. *Staff*

51. *Principles of Economics.* 3 s.h. *Staff*

52. *Principles of Economics.* 3 s.h. *Staff*

109. *Economic Geography of Latin America.* 3 s.h.

114. *Economic Geography of Africa.* 3 s.h. *Tuthill*

115. *Fundamentals of Geography.* 3 s.h. *Tuthill*

120. *Economic Geography of Southern Asia.* 3 s.h. *Reed*

132. *The Economic History of the United States.* 3 s.h. *Saville*

138. *Economic Statistics.* 3 s.h. *Hanna*

139. *Introduction to Econometrics.* Prerequisites: Math 21 and 22 or equivalent; Economics 138 or Bus. Admin. 138 or equivalent. 3 s.h. *Staff*

149. *The Theory of the Firm.* 3 s.h. *Finger, Treml, and Vernon*

150. *Economic Thought since Adam Smith.* 3 s.h. *Goodwin*

151. *Urban Geography.* 3 s.h. *Reed*

153. *Money and Banking.* 3 s.h. *Yohe, Clark, and Black*

154. *Aggregative Economics.* 3 s.h. *Blackburn, Condos, and Hartley*

155. *Labor Problems.* 3 s.h. *de Vyver and Kreps*

189. *Business and Government.* Prerequisite: Economics 149 or consent of the instructor. 3 s.h. *Vernon and Gillis*

191, 192. *Independent Study.* Admission will be subject to approval of the individual instructor and the Department. 6 s.h. *Staff*

193, 194. *Independent Study.* Same as 191, 192 but for seniors. 6 or 12 s.h. *Staff*

201, 202. *Senior Seminar in Economics.* For majors in Economics, with the consent of the Department. 6 s.h. *Staff*

203. *Non-Western Urbanization.* 3 s.h. *Reed*

204. *Advanced Money and Banking.* 3 s.h. *Yohe*

211. *Introduction on Mathematical Economics.* Prerequisites: Economics 149 and 154; Math 21 or 22 or the equivalent. 3 s.h. *Staff*

218. *Business Cycles.* 3 s.h. *Yohe*

219. *Economic Problems of Underdeveloped Areas.* 3 s.h. *Rottenberg, Saville, and Spengler*

231. *Economic History of Europe.* 3 s.h. *Smith*

233. *State and Urban Finance.* Prerequisite: Economics 51-52 or consent of the instructor. 3 s.h. *Gillis and Black*

237, 238. *Statistical Methods.* Prerequisite: Economics 138 or consent of the instructor. Either semester may be taken for credit. 6 s.h. *Hanna*

243. *Econometrics I.* 3 s.h. *Naylor*

244. *Econometrics II.* 3 s.h. *Naylor*

257. *Manpower and Human Resources.* 3 s.h. *Kreps*

262. *Trade Unionism and Collective Bargaining.* 3 s.h. *de Vyver*

265. *International Trade and Finance.* Prerequisite: Economics 149 or consent of the instructor. 3 s.h. *Finger and Clark*

268. *Competition and Monoply.* 3 s.h. *Finger*

286. *Latin American Economics.* 3 s.h. *Smith*

287. *Public Finance.* 3 s.h. *Davies and Gillis*

293. *Soviet Economic History.* 3 s.h. *Treml*

294. *Soviet Economic System.* Prerequisite: Economics 293 or permission of the instructor. 3 s.h. *Treml*

Departmental Major

Courses required of all majors in the Department. Mathematics 17 or 21. Economics 1 or 51 and 2 or 52. Business Administration 59. Mathematics 22 is strongly recommended.

Number of hours needed: 21 s.h. in addition to Economics 1 or 51 and 2 or 52 and Business Administration 59.

Required courses. Economics 138 or equivalent, 149, 154.

Elective courses. Any 12 hours selected from the Departmental course offerings. Business Administration 143 and 190 may also be offered to meet the Elective requirement. Independent study can count for up to 6 hours of the 12 hours required.

Related work. 18 s.h. Departments in which related work is usually taken: Mathematics, Business Administration, Sociology, Psychology, Political Science, and History. In special cases courses taken in other departments may be counted as related work with the approval of the appropriate department and dean.

The Department offers work leading to graduation with distinction. See the section on Honors.

Education

Professor Cartwright, *Chairman*; Associate Professor Charles B. Johnson, *Director of Undergraduate Studies*; Professors Gehman, Githens, Hopkins, Hurlburt, Petty, Shuman, and Weitz; Associate Professors Ballan-

tyne, Colver, Katzenmeyer, Martin, Pittillo, Spaulding, and Sublett; Assistant Professors Carbone, Di Bona, and Joseph C. Johnson; Lecturer Engelhart

Courses in the Department of Education are designed for two groups of students: (1) students who have definitely chosen teaching as their life work or others with teaching experience, and (2) students who desire to study the school as a unique social institution.

Students who expect to teach in the public schools should plan their courses in accordance with the general regulations set forth under Teaching. Students who intend to teach in elementary schools should advise with Professors Petty or Sublett; those intending to teach in secondary schools should advise with Professors Cartwright, Githens, C. B. Johnson, or Shuman. Students should confer with these advisers prior to registration each semester.

Students who do not expect to teach but desire an understanding of the school as part of a liberal education are advised to elect such courses as Education 100, 113, 114 for their introductory work in the Department and then to elect further work in accordance with their special interests.

68. *Mental Hygiene.* Not open to students who have had Psychology 115. 3 s.h. *Gehman*

100. *Social and Philosophical Foundations of Education.* 3 s.h. *Carbone, DiBona, C. B. Johnson, Martin, and Sublett*

101. *Elementary Education: Principles.* 2 s.h. *Petty and Sublett*

102. *Elementary Education: Practice.* Prerequisites: 2.0 average overall and in the elementary education major. 2 s.h. *Petty and Sublett*

105. *Elementary Education: Reading.* 2 s.h. *J. C. Johnson*

106. *Elementary Education: Language Arts.* 2 s.h. *J. C. Johnson*

107. *Elementary Education: Arithmetic.* 2 s.h. *Petty*

108. *Elementary Education: Science.* 2 s.h. *Githens*

113. *History of American Education.* 3 s.h. *C. B. Johnson*

114. *History of Education in European Culture.* 3 s.h. *C. B. Johnson*

118. *Educational Psychology.* Prerequisite: Psychology 91. 3 s.h. *Staff*

151. *Public School Music Education.*

152. *Public Music School Education.*

153. *Vocal Music in the Public School.*

154. *Instrumental Music in the Public School.*

161. *Integrated Art in the Public School.* 2 s.h. *Stars*

162. *Plastic Art in the Public School.* 3 s.h. *Stars*

201. *Teaching and Supervision of Arithmetic.* 3 s.h. *Petty*

202. *Comparative and International Education: Industrialized Nations.* 3 s.h. *Di Bona*

204. *The School as an Organization.* 3 s.h. *Martin*

206. *Philosophical Analysis of Educational Concepts.* 3 s.h. *Carbone*

207. *Social History of Twentieth-Century American Education.* 3 s.h. *C. B. Johnson*

215. *Secondary Education: Principles.* 3 s.h. *Cartwright, Githens, C. B. Johnson, Shuman, and Sublett*

215. *Secondary Education: Principles.* Prerequisite: 2.0 average overall and in teaching field or fields. Must be accompanied by Education 216. *Either semester.* 3 s.h. *Cartwright, Githens, C. B. Johnson, Shuman, Sublett*

216. *Secondary Education: Internship.* Prerequisite: 2.0 average overall and in the major or teaching field; preparation for a teaching field and/or the consent of the instructor. 6 s.h. *Cartwright, Githens, Hurlburt, C. B. Johnson, Shuman*

Note: Education 215, 216, 118, and one other course, depending on the student's field, constitute a semester's work during the senior year.

217. *The Psychological Principles of Education.* 3 s.h. *Gehman, Spaulding, Weitz*

218. *Comparative and International Education: Developing Societies.* 3 s.h. *Di Bona*

219. *Comparative and International Education: South Asia.* 3 s.h. *Di Bona*

225. *The Teaching of History and the Social Studies.* 3 s.h. *Cartwright*

226. *Teaching Reading in the Elementary School.* 3 s.h. *J. C. Johnson*

236. *Teaching Reading in the Secondary Schools.* 3 s.h. *J. C. Johnson*

237. *The Teaching of Literature in Secondary School.* 3 s.h. *Shuman*

239. *The Teaching of Grammar, Composition, Mechanics, and Usage in Secondary School.* 3 s.h. *Shuman*

241. *Principles of Guidance.* Prerequisite: 6 hours of psychology or educational psychology. 3 s.h. *Colver*

246. *The Teaching of Mathematics.* 3 s.h. *Reynolds*

253. *Law and Education.* 3 s.h. *Martin*

255. *Assessment of Abilities.* 3 s.h. *Colver*

258. *Assessment of Personality, Interests, and Attitudes.* Prerequisites: Education 243 and 255, or approval of instructor. 3 s.h. *Weitz and Colver*

266. *Science in the Elementary School.* 3 s.h. *Githens*

276. *The Teaching of High-School Science.* 3 s.h. *Githens*

Departmental Major

Undergraduate majors in Education at Duke University are offered in elementary-school education and science education.

The Department offers work leading to graduation with distinction. See the section on Honors in this *Bulletin.*

Majors in Elementary Education and Science Education

Students desiring to teach in elementary schools or in science in secondary schools should read the descriptions of these programs of study listed under the proper headings elsewhere in this *Bulletin*.

Materials and Methods Courses

Certain courses concerned with materials and methods in teaching the various subjects in the public school curriculum are listed in the proper subject matter department. These courses are intended to give credit for teaching certificates and are recommended by the Department of Education for such credit.

Engineering

For courses in Civil, Electrical, and Mechanical Engineering, see pages 187-192.

English

Professor Ferguson, *Chairman*; Professor Williams, *Director of Undergraduate Studies*; Professor Patton and Assistant Professor Gerber, *Supervisors of Freshman Instruction*; Professors Blackburn, Bowman, Boyce, Budd, Duffey, Gohdes, Knight, Lievsay, Nygard, Reiss, Sanders, Smith, Stevenson, and Turner; Associate Professors Anderson, Bevington, Harwell, Jones, Mellown, Price, Randall, Reardon, van Kluyve, and Wetherby; Assistant Professors Butters, Clubbe, Clum, Gerber, Jackson, Krueger, Levinson, Michalak, Monsman, Schwerman, and Strandberg; Lecturers Rottenberg and Vick

1-2. *Freshman Composition.* (Will not be offered after 1968-69; see *Academic Guide.*)

65-66. *Imaginative Writing.* Consent of instructor required. 6 s.h. (Not offered in 1969-70.)

93. *Technical Communication.* Prerequisite: English 1. 3 s.h.

101. *Advanced Expository Writing.* Primarily for juniors and seniors; open also to sophomores approved by the instructor. 3 s.h. *Harwell*

103-104. *Creative Writing.* 6 s.h. *Bevington*

Speech and Drama

51. *Essentials of Public Speaking.* 3 s.h. *Michalak, Reardon, and Schwerman*

100. *English for Foreign Students.* No credit. *Wetherby*

118. *Persuasive Speaking.* Prerequisite: English 51 or 151 or consent of the instructor. 3 s.h. *Wetherby*

119. *History of the Theater.* Primarily for juniors and seniors; open also to sophomores approved by the instructor. 3 s.h. *Michalak*

120. *Stagecraft.* Primarily for juniors and seniors; open also to sophomores approved by the instructor. 3 s.h. *Michalak*

130. *Play Production.* Primarily for juniors and seniors; open also to sophomores approved by the instructor. 3 s.h. *Michalak*

139. *The Speaking Voice.* 3 s.h. *Schwerman and Wetherby*

150. *Oral Interpretation of Literature.* For juniors and seniors; open also to sophomores approved by the instructor. 3 s.h. *Schwerman*

151. *Essentials of Public Speaking.* (Not open for credit to students who have taken 51.) 3 s.h. *Michalak, Reardon, and Schwerman*

152. *Argumentation.* Prerequisite: English 51 or 151 or consent of the instructor. 3 s.h. *Wetherby*

171, 172. *Broadcasting.* 6 s.h. *Wetherby*

English and American Literature and Language

55, 56. *Representative British Writers.* 6 s.h. *Staff*

57, 58. *Representative American Writers.* Open to juniors and seniors with the permission of the Director of Undergraduate Studies. Prospective majors should take 173-176 instead of this course. 6 s.h. *Staff*

111, 112. *Eighteenth-Century Literature.* 6 s.h. *Ferguson and Jackson*

117. *Milton.* 3 s.h. *Lievsay and Price*

123, 124. *Shakespeare.* 6 s.h. *Bowman, Krueger, Randall, and Williams*

125, 126. *English Literature, 1789-1832.* 6 s.h. *Clubbe, Patton, and Stevenson*

127. *The English Novel From the Beginnings to 1800.* 3 s.h. *Randall*

128. *The English Novel in the Nineteenth Century.* 3 s.h. *Harwell, Monsman, and Stevenson*

129. *The English Novel in the Twentieth Century.* 3 s.h. *Mellown and Smith*

131, 132. *English Literature, 1832-1900.* 6 s.h. *Harwell, Monsman, and Sanders*

133, 134. *Twentieth-Century Poetry.* 6 s.h. *Bevington*

137, 138. *American Literature.* (Not offered after 1968-69.)

140. *Medieval Literary Tradition.* 3 s.h. *van Kluyve*

141. *Chaucer.* 3 s.h. *van Kluyve*

142. *English Literature of the Middle Ages.* 3 s.h. *Reiss and van Kluyve*

143,144. *English Literature: Elizabethan and Seventeenth Century.* 6 s.h. *Krueger*

148. *Satire.* Prerequisite: English 55, 56.

150. *Oral Interpretation of Literature.* See under "Speech and Drama."

153, 154. *Readings in European Literature.* 6 s.h. *Clubbe and Krueger*

155. *Modern European Drama.* 3 s.h. *Reardon*

156. *Modern British Drama.* 3 s.h. *Reardon*

159. *Readings in Scandinavian Literature.* 3 s.h. *Anderson*

161. *Development of the English Language.* 3 s.h. *Bowman*

162. *Modern English Grammar.* 3 s.h. *Butters*

165, 166. *American Fiction.* 6 s.h. *Anderson and Budd*

167, 168. *The European Epic Tradition.* Prerequisite for 168: 167. *Knight* (Not offered in 1969-70.)

173. *American Literature to 1800.* 3 s.h. *Staff*

174. *American Literature from 1800 to 1860.* (Not open to students who have taken 137.) 3 s.h. *Staff*

175. *American Literature from 1860 to 1915.* (Not open to students who have taken 138.) 3 s.h. *Staff*

176. *American Literature since 1915.* (Not open to students who have taken 138.) 3 s.h. *Staff*

179. *American Drama.* 3 s.h. *Reardon*

Conference Courses: Seminars primarily for majors, with priority given to seniors. Emphasis on literary theory and critical writing, with intensive study of one or more authors. 3-6 s.h. for each course.

180. *Conference on Criticism.*

181. *Conference on Drama.*

182. *Conference on Poetry.*

183. *Conference on Fiction.*

184. *Conference on Prose Non-Fiction or a Special Topic.*

185. *The Agrarian Spirit.* 3 s.h.

186. *The Industrial Spirit.* 3 s.h. (Not offered in 1969-70.)

191, 192. *Independent Study.* Open only to highly qualified students by permission of the Department. 6 s.h. See section, Eligibility for Special Curricular Programs.

197-198. *Senior Seminar in English.* Admission by invitation of the Department. 6 s.h. *Jones, Krueger, and Mellown*

For Seniors and Graduates

203. *Chaucer. The Canterbury Tales.* 3 s.h. *Nygard, Reiss, and van Kluyve*

204. *Chaucer. Troilus and Criseyde and the Minor Poems.* 3 s.h. *Nygard, Reiss, and van Kluyve*

207, 208. *History of the English Language.* 6 s.h. *Nygard, Reiss, and van Kluyve*

209. *Present-Day English.* 3 s.h. *Nygard and Reiss*

210. *Old English Literary Tradition.* Prerequisite: English 207. 3 s.h. *Nygard, Reiss, and van Kluyve*

211. *Middle English Literary Tradition.* 3 s.h. *Nygard, Reiss, and van Kluyve*

213. *Introduction to Folklore.* 3 s.h. *Nygard*
215, 216. *Tudor and Stuart Drama, 1500-1642.* 6 s.h. *Randall*
217. *Milton.* 3 s.h. *Lievsay*
218. *Spenser.* 3 s.h. *Lievsay*
219, 220. *The Eighteenth Century.* 6 s.h. *Ferguson*
221, 222. *English Literature of the Early Nineteenth Century.* 6 s.h. *Patton, Sanders, and Stevenson*
223, 224. *English Literature of the Later Nineteenth Century.* 6 s.h. *Sanders and Stevenson*
227. *Literary Criticism.* 3 s.h. *Lievsay*
229, 230. *American Literature, 1800-1865.* 6 s.h. *Budd, Jones, and Turner*
233, 234. *American Literature, 1865-1920.* 6 s.h. *Gohdes*
235, 236. *American Literature Since 1920.* 6 s.h. *Duffey*
237. *English Drama, 1642-1800.* 3 s.h.
239. *Shakespeare.* The plays. 3 s.h. *Williams*
244. *Literary Biography.* 3 s.h. *Sanders*
251, 252. *English Literature in the Seventeenth Century.* 6 s.h. *Jackson, Lievsay, and Randall*
261, 262. *English Literature of the Twentieth Century.* 6 s.h. *Smith*
264. *Major Developments in Contemporary American Poetry.* 3 s.h.
266. *Recent Critical Thought.* 3 s.h. *Duffey*
269, 270. *Southern Literature.* 6 s.h. *Turner*
277. *English Prose of the Sixteenth Century.* 3 s.h. *Lievsay*
278. *English Non-Dramatic Poetry of the Sixteenth Century.* 3 s.h. *Lievsay*

Departmental Major

Basic requirement. English 55-56.

Major Requirements. Twenty-four semester hours above the sophomore level in writing, speech, drama, literature, and language; at least eighteen hours must be in English and American literature meeting the following requirements of distribution:

1. Six hours at the junior-senior level (generally to be taken in the junior year) in one of the designated period courses (143-144, 111-112, 125-126, 131-132, 137-138, or any two consecutive courses in the series 173-176).
2. Three hours in one of the major authors: Chaucer, Shakespeare, or Milton (141, 203, 123, 124, 239, 117, 217).
3. The remaining hours must meet the following distribution requirements:
   (a) Three hours of English literature before 1800 (excluding major authors), unless the requirement is met in (1) above.

(b) Three hours of English literature after 1800, unless the requirement is met in (1) above.
(c) Three hours of American literature, unless the requirement is met in (1) above.

Related Work. Eighteen semester hours, which may include appropriate courses in history, aesthetics, art, music, foreign languages and literature, literature in translation, philosophy, religion, linguistics, and the teaching of English. Related work must be taken in at least two departments.

The Department offers work leading to graduation with distinction. See the section on Honors in this *Bulletin.*

Forestry

Students without a bachelor's degree who are preparing for work in forestry as a profession should take the courses outlined under the Academic-Forestry Combination outlined in the section on Requirements for Degrees. However, with the consent of the instructor in charge, certain forestry courses may be elected by students in other curricula provided they have had adequate preparation (see *Bulletin of the School of Forestry*).

Members of the sophomore, junior, and senior classes, whether or not registered in the Forestry Combination Program, may elect the following course:

152. *Conserving Natural Resources.* 3 s.h. *Staff*

French

For courses offered in French, see *Romance Languages.*

Geology

Associate Professor Heron, *Chairman*; Associate Professor Furbish, *Director of Undergraduate Studies*; Associate Professors Perkins and Pilkey; Assistant Professors Blanton and Lynts

1. *Physical Geology.* 4 s.h. *Heron and Perkins*
2. *Historical Geology.* Prerequisite: Geology 1. 4 s.h. *Heron and Lynts*
53. *Introductory Oceanography.* Prerequisite: one year laboratory science or concurrent enrollment in a laboratory science. 3 s.h. *Pilkey and Searles*

101. *Crystallographic Mineralogy.* 3 s.h. *Furbish*

102. *Fundamentals of Mineralogy.* Prerequisite: Chemistry 2 (may be taken concurrently) and Geology 101. 3 s.h. *Furbish*

106. *Igneous and Metamorphic Rocks.* Prerequisite: Geology 102. 3 s.h. *Furbish*

108. *Sedimentary Rocks.* Prerequisite: Geology 1. 2 s.h. *Heron*

164. *Introduction to Geologic Field Methods.* Prerequisites: Geology 1 and 2. 3 s.h. *Furbish*

175, 176. *Majors Seminar.* Required of all majors: 175 in the spring of the junior year, 176 in the spring of the senior year. 1 s.h. *Staff*

191, 192. *Independent Study.* Open only to highly qualified juniors and seniors, by permission of the Director of Undergraduate Studies. 6 s.h. *Staff*

For Advanced Undergraduates and Graduates

200. *Field Methods in Physical and Geological Oceanography.* 3 s.h. *Blanton, Lynts, Perkins, and Pilkey*

204. *Physical Oceanography.* Prerequisites: 1 year physics, chemistry, calculus, and a general oceanography course or permission of instructor. (Given at Beaufort only.) 6 s.h. *Blanton*

205. *Geological Oceanography.* Not open to students who have completed Geology 206. 6 s.h. *Pilkey* (Given at Beaufort only.)

206. *Principles of Geological Oceanography.* Prerequisite: Geology 213 or consent of instructor. 3 s.h. *Pilkey*

208. *Shallow-Marine Geology.* Prerequisite: Geology 213 or consent of instructor. 3 s.h. *Perkins*

211. *Stratigraphic Principles and Application.* Prerequisites: Geology 213. 3 s.h. *Perkins*

213. *Sedimentology.* Prerequisites: Geology 108 or consent of instructor. 3 s.h. *Pilkey*

214. *Sediments in Thin Section.* Prerequisites: Geology 213. 3 s.h. *Perkins*

222. *Sedimentary Minerals.* Prerequisites: Geology 102 or consent of instructor. 3 s.h. *Heron*

229. *Economic Geology.* Prerequisites; Geology 102. 3 s.h. *Furbish*

230. *Principles of Structural Geology.* Prerequisites: Geology 106, 108. Given biennially. 3 s.h. *Furbish*

241-242. *Invertebrate Paleontology.* Prerequisites: Geology 1, 2, or consent of instructor. 6 s.h. Given biennially. *Lynts*

243-244. *Micropaleontology.* Prerequisites: Geology 241-242, or consent of instructor. 6 s.h. Given biennially. *Lynts*

247. *Paleoecology.* Prerequisites: Geology 207, 242, or consent of instructor. 3 s.h. Given biennially. *Lynts*

251. *Geomathematics.* Prerequisites: Geology 2, Mathematics 22, or 68 and 113, or consent of instructor. 3 s.h. Given biennially. *Lynts*

Departmental Major

Prerequisites. Chemistry 1, 2, Geology 1 and 2.

Major Requirements. A.B. degree, a minimum of 24 hours of geology above the elementary courses (1, 2, and 53). B.S. degree, a minimum of 24 hours of geology above the elementary courses (1, 2, and 53) plus an approved summer field course normally taken during the summer of the junior year.

Related Work. Number of hours needed for A.B., 12 s.h.; for B.S., 18 s.h. Required courses, Mathematics 21, 22. Departments in which related work is usually taken: Chemistry, Mathematics, Physics, Zoology, and Engineering.

Germanic Languages and Literature

Professor Salinger, *Chairman*; Professor Phelps, *Director of Undergraduate Studies*; Lecturer Bessent, *Supervisor of Freshman Instruction*; Associate Professor Maxwell; Assistant Professors Alt, Boletta and Stern; Visiting Assistant Professors Rollka and Romero; Instructors Klabes, Krebs, Peters and Wertz

1-2. *Elementary German.* 8 s.h. *Bessent and Staff*

63-64. *Intermediate German.* Prerequisite: German 1-2 or equivalent. 8 s.h. *Staff*

German 63-64 is prerequisite for 91, 92 and all 100 group courses.

91, 92. *Introduction to German Literature.* 4 s.h. *Stern and Staff*

107, 108. *Scientific German.* 4 s.h. *Klabes*

109, 110. *German Prose Fiction.* 6 s.h. *Alt*

115, 116. *German Drama of the Nineteenth Century.* 6 s.h.

117, 118. *German Conversation.* 6 s.h. *Bessent*

119, 120. *Survey of German Literature.* 6 s.h. *Romero*

125, 126. *Contemporary German Literature.* 6 s.h. *Alt*

131, 132. *Introduction to the Age of Goethe.* 6 s.h. *Phelps and Salinger*

133, 134. *The German Lyric.* 6 s.h. *Salinger*

133P, 134P. *Interpretation of German Poems.* By written permission of instructor only. *Salinger*

171, 172. *German Literature in English Translation.* 6 s.h.

191, 192. *Independent Study.* Open only to qualified students in the junior year, by permission of the Department. 6 s.h. *Alt, Boletta, Phelps, and Salinger*

193, 194. *Independent Study.* Open only to qualified students in the senior year, by permission of the Department. 6 s.h. *Alt, Boletta, Phelps, and Salinger*

201, 202. *Goethe.* 6 s.h. *Phelps and Salinger*
203, 204. *Eighteenth Century.* 6 s.h. *Phelps*
205, 206. *Middle High German.* 6 s.h. *Boletta*
207, 208. *German Romanticism.* 6 s.h.
209, 210. *Kleist, Grillparzer, and Hebbel.* 6 s.h. *Alt and Salinger*
211. *Heinrich Heine.* 3 s.h. *Salinger*
213. *Nineteenth-Century Literature.* 3 s.h. *Alt*
214. *The Twentieth Century.* 3 s.h.
215. *Seventeenth-Century Literature.* 3 s.h.
216. *History of the German Language.* 3 s.h. *Boletta*
217. *Renaissance and Reformation Literature.* 3 s.h.
218. *The Teaching of German.* 3 s.h. *Phelps*
230. *German Cultural History.* 3 s.h.

Departmental Major

Prerequisites. German 1-2 and 63-64, or equivalent.

Major Requirements. Twenty-four semester hours in the German Department. Nine of these must be selected from the 200 courses. The remaining fifteen may be selected from any courses in the 100 or 200 groups. German 107, 108 does not count toward the major. German 117, 118, and 119, 120, as well as Linguistics 101, are strongly recommended to any student majoring in the Department.

Related Work. Eighteen semester hours, chosen from the Humanities with the approval of the Germanic Languages Department.

Greek

For courses in Greek, see *Classical Studies.*

Health and Physical Education

Trinity College and the School of Engineering

Mr. Cameron, *Director of Physical Education and Athletics*; Professor Friedrich, *Chairman of Physical Education and Assistant Director of Physical Education*; Assistant Professor Skinner, *Supervisor of Freshman Instruction*; Professor Falcone; Associate Professors Buehler, Cox, and Persons; Assistant Professors Corrie, Davis, Hall, Harvey, LeBar, Reibel; Instructors Butters, Coble, Hagler, Daly, and Lutz

Required Physical Education for Men

A student must complete four semesters of physical education to fulfill graduation requirements. For each semester of undergraduate enroll-

ment, the student is issued a uniform appropriate for the season and the activity in which he is engaging. The uniform is issued, exchanged, laundered, and maintained at no additional expense to the student. Equipment for courses is also furnished. Students who cannot swim are required to learn to swim during the Freshman year.

All students are given a medical and physical examination before registration. Freshmen who have physical handicaps must register in Adapted Physical Education—P.E. 11 and P.E. 12. Sophomores in P.E. 61 and 62. Students assigned to these classes will take work adapted to their particular needs and capacities. Freshman students lacking in basic fitness and proficiency are given special attention in an Individual Development class.

Physical Education 1. Students not assigned to adapted physical education will register in P.E. 1—Foundations of Physical Education. The fall program for freshmen has been specifically designed to provide the student with a broader concept of the "how" and "why" of physical activity. It includes an extensive battery of tests and involves information and activities related to interpretations of health and fitness exercise and the heart, training techniques, relaxation techniques, weight control, body mechanics and posture control. Students are given an opportunity to improve their level of fitness and become acquainted with various sports activities, through a special orientation program.

On the basis of the test results and other factors such as body type, students are guided into those areas which can best help them develop their physical potential and provide for their present and future needs.

During the second semester, students are enrolled in those activities best suited for them. Activities are selected from the various course offerings.

After a student completes freshman Physical Education (P.E. 1), he may fulfill his physical education requirement by electing and satisfactorily completing three courses from the following individual, dual, and team sports: P.E. 36—Beginning and Intermediate Swimming; P.E. 46—Swimming and Life Saving; P.E. 51—Tumbling, Rebound Tumbling and Apparatus; P.E. 52—Badminton-Handball; P.E. 53—Basketball-Speedball; P.E. 54—Combatives; P.E. 55—Soccer-Lacrosse; P.E. 56—Advanced Swimming and Water Safety; P.E. 57—Tennis-Volleyball; P.E. 58—Golf (fee of $20.00 for the semester charged for this course); P.E. 59—Track and Field Activities; P.E. 61 and 62—Sophomore adapted P.E. is offered for those students who are assigned to this course by the health center; P.E. 63—Individual Development (open to all students; includes conditioning, posture, weight control, fundamental movements, and weight training); P.E. 64—Fencing; P.E. 70—Bowling ($10.00 fee required).

Elective Professional Physical Education Courses (Men)

The courses listed below are arranged to meet the increasing demand for teachers who are qualified to coach and teach Physical Education as well as for those who may have leadership responsibilities in the area of recreation. These courses are open as electives for students in High School Teaching Programs and others for whom such courses may be appropriate. Teaching majors may elect 18 semester hours from courses in this group. Six semester hours may be elected from the courses listed under Special Methods in Physical Education, 9 semester hours from the courses listed under Theory and Practice in Physical Education, and 3 semester hours from Health Education. The courses must be selected with the prior approval of the Director of Undergraduate Studies from the student's major department, in order to meet the needs of the individual.

Special Methods in Physical Education

163. *Athletic Coaching in Secondary Schools.* Prerequisites: courses 1 and 2. Open to juniors and seniors. 3 s.h. *Buehler and Parker*

164. *Athletic Coaching in Secondary Schools.* Prerequisites: courses 1 and 2. Open to juniors and seniors. 3 s.h. *Falcone and Daly*

Theory and Practice in Physical Education

65. *History and Principles of Physical Education.* 3 s.h. *Friedrich*

66. *Recreational Leadership.* 3 s.h. *Friedrich*

182. *The Administration of Physical Educatioin and Athletics in Secondary Schools.* Open to juniors and seniors. 3 s.h. *Corrie*

190. *Protective Practices in Physical Education.* Open to juniors and seniors. 3 s.h. *Davis*

Health Education

132. *School Health Problems.* 3 s.h. *Friedrich*

Health and Physical Education

The Woman's College

Professor E. Bookhout, *Chairman*; Professor Lewis, *Director of Undergraduate Studies*; Associate Professors Eddy, Holton and Uhrhane; Assistant Professors Lloyd, Raynor, Spangler, Woodyard and Wray; Instructor Kahle

Required Physical Education for Women

A student must complete four semester hours of physical education in order to fulfill graduation requirements. Ordinarily work must be completed by the end of the sophomore year. Classes meet three times a week or the equivalent thereof. Gym suit, dance leotard, bathing suit, warm-up suit, and towel are provided and laundered as needed.

Each semester is divided into halves. In general, indoor activities are taught during the two winter half-semesters and outdoor activities in the fall and spring.

Every student must take one course (half-semester) in dance, and one in swimming if she is unable to pass the swimming test. The remaining work necessary to complete the requirement may be elected from the activities listed in this section.

All students are given a physical examination upon entering and at any other time when deemed necessary. Classes in adapted physical education and recreational sports are arranged for those who should not take the more active work.

Special Freshman Physical Education

At the beginning of the year a series of tests is given to all freshman women. The test results are used to advise each student in registering for the course most beneficial for her. Courses in sports fundamentals, beginning swimming, and posture and movement are offered for those who need to improve their skills in these areas. Students whose test scores are satisfactory may enroll in activity classes with the sophomores. Special X sections are available for those students who score in the top ten per cent on motor ability.

Physical Education Activities

Individual and dual sports: archery, badminton, bowling, diving, fencing, first aid, golf, gymnastics, life saving, recreational sports, riding, swimming, tennis, track and field, and water safety.

Team sports: basketball, hockey, "rec" ball, softball, speedball, and volleyball.

Dance: folk dance, modern dance, square dance, and tap dance.

Developmental Activities: conditioning exercises, posture, posture and movement, and sports fundamentals.

1-2. *Freshman Activity.* 2 s.h. *Staff*

51-52. *Sophomore Activity.* 2 s.h. *Staff*

Theory in Physical Education

The courses listed in this section are open for credit as follows: P.E. 91, 101, 117, 119, 120, 181-182, and 185, Health Education 101-102 are

open to students majoring in physical education and health; P.E. 91 is also open to students in the Elementary Teaching Program. Physical Education 105, 106, 113, 114, and 130 and Health Education 134, 137, 138, and 140 are open to all undergraduates, both men and women.

91. *First Aid and Safety in Physical Education.* 1 s.h. *Lloyd*

101. *History and Principles of Physical Education.* 3 s.h. *Lloyd*

102. *The Teaching of Physical Education in Elementary Schools.* 2 s.h. *Lewis*

105, 106. *Methods and Materials in Recreation.* Open to sophomores, juniors, and seniors, 3 s.h. each. *Holton*

113. *Mammalian Anatomy.* Not open to students who have had Zoology 53. Prerequisite: Biology 1 and 2. 4 s.h. *Bookhout*

114. *Kinesiology.* Prerequisites: Biology 1 and 2, and P.E. 113 or Zoology 53. 3 s.h. *Bookhout*

117. *Individual Physical Education.* 2 s.h. *Bookhout*

119. *Organization and Administration of Physical Education.* 2 s.h. *Staff*

120. *Measurement and Evaluaton in Physical Education.* 2 s.h. *Bookhout*

130. *History of the Dance.* 3 s.h. *Wray*

181-182. *Methods and Materials in Physical Education.* 6 s.h. *Lewis and Staff*

185. *Advanced Methods and Materials in Physical Education.* 3 s.h. *Lewis and Staff*

Health Education

101-102. *Health Education Fundamentals, Methods, and Materials.* 6 s.h. *Uhrhane*

134. *School Health.* 2 s.h. *Uhrhane*

137. *Health Problems of Developing Countries.* 3 s.h. *Uhrhane*

138. *Health Problems of Metropolitan Areas.* 3 s.h. *Uhrhane*

140. *Gereology and Health.* 3 s.h. *Uhrhane*

Major in Physical Education and Health

A major in physical education and health is offered for students who wish to teach physical education at the secondary level. The requirements meet the standards of the North Carolina Department of Public Instruction and of many other states.

Prerequisites. Biology 1-2, Psych. 91, (These courses also count as part of the uniform course requirements.) and P.E. 101.

Major Requirements. P.E. 91, 113, 114, 117, 119, 120, 181-182, 185.

Related Work. Zoology 151, H.E. 101-102. For certification in secondary teaching the related work includes: Education 100 or 113, 118, 215 and 216.

History

Professor Colton, *Chairman*; Associate Professor Young, *Director of Undergraduate Studies*; Associate Professor W. Scott, *Supervisor of Freshman Instruction*; Professors Alden, Curtiss, Durden, Embree, Ferguson, Hamilton, Hillerbrand, Holley, Lanning, Parker, Preston, Ropp, Watson, and Woody; Associate Professors Acomb, Davis, Ginter, Hollyday, Lerner, A. Scott, Silberman, TePaske, and Uhalley; Assistant Professors Cahow, Cell, Graham, Mauskopf, and Rainey; Instructors Krantz and Nathans; Babcock, Goodrich, and Johnston

The undergraduate courses in history are designed to afford (1) an introduction to the study of history by a consideration of the history of the modern world; (2) a more intensive study of general American history; (3) opportunities for more advanced study of phases of American, English, European, Hispanic-American, Russian, African, and Asian history.

Course 1-2 or 51-52 or the equivalent is a prerequisite for all other courses; courses 91 and 92 are recommended for all 100 and 200 courses in United States history. However, seniors may take advanced courses without these prerequisites if they secure the permission of the instructor and the Director of Undergraduate Studies. Sophomores who took only one semester of course 1-2 in the freshman year may take courses numbered between 50 and 100 concurrently with the second semester, provided they made a grade of B or above on the semester taken. Sophomores must obtain permission of the instructor in order to be admitted to courses numbered above 100; students who are not fully qualified sophomores will not be admitted to these courses. Courses for seniors and graduates are limited to thirty students.

1, 2. *A History of European Civilization.* 6 s.h. *Staff*

51, 52. *A History of European Civilization.* 6 s.h. *Staff*

53. *Greek History.* (Listed also as Classical Studies 53.) 3 s.h. *Oates*

54. *Roman History.* (Listed also as Classical Studies 54.) 3 s.h. *Oates*

61, 62. *Non-Western Civilizations.* 6 s.h. *Embree, Graham, Silberman, TePaske, and Uhalley*

91. *The Development of American Democracy to 1865.* 3 s.h. *Babcock, Cahow, Davis, Durden, Holley, Nathans, and A. Scott*

92. *The Development of American Democracy, 1865 to the Present.* 3 s.h. *Babcock, Cahow, Davis, Durden, Holley, Nathans, and A. Scott*

91A, 92A. *Upper Class Tutorial.* 1 s.h. each semester. *Staff*

93. *Modern Technology.* 3 s.h. *Ropp*

99. *Naval History and Elementary Strategy.* 3 s.h. *Ropp*

101, 102. *Introduction to the Civilizations of Southern Asia.* (See Interdisciplinary Course 101, 102.)

103, 104. *Renaissance and Reformation.* 6 s.h. *Krantz*

105, 106. *Political and Constitutional History of England.* 6 s.h. *Hamilton*

107, 108. *Social and Cultural History of England.* 6 s.h. *Ferguson*

111, 112. *America in the Colonial and Early Modern Era.* 6 s.h. *Alden*

113, 114. *America in the Twentieth Century.* 6 s.h. *Watson*

115, 116. *History of Africa.* 6 s.h. *Graham*

117, 118. *European Imperialism and Colonialism.* 6 s.h. *Cell*

119, 120. *History of Socialism and Communism.* 6 s.h. *Lerner*

121, 122. *Diplomatic History of the United States.* 6 s.h. *Davis*

123, 124. *City and Frontier in American History.* 6 s.h. *A. Scott*

125. *The Athenian Empire.* (Listed also as Classical Studies 134.) 3 s.h. *Staff*

126. *Alexander The Great.* (Listed also as Classical Studies 135.) 3 s.h. *Staff*

127. *History of Latin America Through the Formation of the National Governments.* 3 s.h. *Lanning and TePaske*

128. *Inter-American Affairs.* 3 s.h. *Lanning*

131, 132. *The Development of the Major South American Powers.* 6 s.h. *TePaske*

133, 134. *Medieval History.* 6 s.h. *Young*

135, 136. *Europe in the Twentieth Century.* 6 s.h. *Colton*

137, 138. *Foreign Relations of the European Powers.* 6 s.h. *W. Scott*

139, 140. *Nineteenth-Century Europe.* 6 s.h. *Hollyday*

141, 142. *History of China.* 6 s.h. *Uhalley*

143, 144. *History of Modern Japan.* 6 s.h. *Silberman*

147. *The History of India to 1757: A Survey.* 3 s.h. *Embree*

148. *The History of India, 1757 to the Present: A Survey.* 3 s.h. *Embree*

149. *Military History.* 3 s.h. *Ropp*

153, 154. *The History of the South.* 6 s.h. *Woody*

157, 158. *The Rise of Modern Science.* 6 s.h. *Mauskopf*

161, 162. *Russia From Ivan the Terrible to the Present.* 6 s.h. *Curtiss and Rainey*

163, 164. *Reform and Politics in Nineteenth-Century America.* 6 s.h. *Durden*

167, 168. *Modern European Intellectual and Cultural History.* 6 s.h. *Parker*

185. *The Agrarian Spirit.* 3 s.h. *Budd and A. Scott*

186. *The Industrial Spirit.* (Same as English 186.) 3 s.h.

199. *The Changing South.* (See Interdisciplinary Course 199.)

For Seniors and Graduates

Students may receive credit for either semester of a hyphenated course at the 200-level without taking the other semester if they obtain written

permission from the instructor and either the Director of Undergraduate or the Director of Graduate Studies.

201-202. *The History of Russia, 1801-1917.* 6 s.h. *Curtiss*

203-204. *The United States, 1850-1900.* 6 s.h. *Woody*

207-208. *City and Frontier in U.S. History.* 6 s.h. *A. Scott*

212. *Recent Interpretations of United States History.* Open only to history graduate students and seniors doing practice teaching in one of their final two semesters. 3 s.h. *Watson*

213-214. *The Old South.* 6 s.h. *Woody*

223-224. *The Old Regime and the French Revolution, 1661-1815.* 6 s.h. *Acomb*

225, 226. *The Age of the Reformation.* 6 s.h. *Hillerbrand*

229. *Recent Interpretations of Modern European History.* Open only to history graduate students and seniors doing practice teaching in one of their final two semesters. 3 s.h. *Parker*

230. *History of Spain.* 3 s.h. *TePaske*

231-232. *The Hispanic Colonies and Republics in America.* 6 s.h. *Lanning*

233-234. *The Institutional, Cultural, and Social History of Hispanic America.* 6 s.h. *Lanning*

241-242. *Modernization and Revolution in China Since 1850.* 6 s.h. *Uhalley*

247. *The History of Modern India, 1757-1857.* 3 s.h. *Embree*

248. *The History of Modern India and Pakistan, 1857-1947.* 3 s.h. *Embree*

249-250. *Social and Intellectual History of the United States.* 6 s.h. *Holley*

263-264. *American Colonial History and the Revolution, 1607-1789.* 6 s.h. *Alden*

265-266. *Modern South America.* 6 s.h. *TePaske*

269. *British History from 1714 to 1867.* 3 s.h. *Hamilton*

270. *British History from Mid-Nineteenth Century.* 3 s.h. *Hamilton*

273, 274. *Topics in the History of Science.* 6 s.h. *Mauskopf*

275-276. *Central Europe, 1849-1914.* Not open to students who have had History 140. 6 s.h. *Hollyday*

277-278. *Reform and Politics in Nineteenth-Century U.S.A.* 6 s.h. *Durden*

285. *Origins of Indian Civilization.* 3 s.h. Listed also as Religion 285. *Sullivan*

287-288. *History of Modern Japan.* 6 s.h. *Silberman*

296. *Canada from the French Settlement.* 3 s.h. *Preston*

297. *The British Empire in the Nineteenth Century. (From 1783).* 3 s.h. *Preston*

298. *The Commonwealth in the Twentieth Century.* 3 s.h. *Preston*

For other courses in Ancient History which may be taken for credit in History or Classical Studies, see Classical Studies 253—*Greece to the*

Orientalizing Period; 254—*The Age of the Tyrants and the Persian Wars*; 255—*The Age of Pericles*; 256—*The Fourth Century through Alexander.*

Independent Study

191, 192. *Independent Study.* Admission will be subject to approval of the individual instructor and the Department. 6 s.h. *Staff*

193, 194. *Independent Study.* Same as 191, 192, but for seniors. 6 or 12 s.h. *Staff*

Undergraduate Seminars

97-98. *Sophomore Seminar.* Open to sophomores on application to the Director of Undergraduate Studies and with permission of the instructor. 6 s.h.

The following seminars are designed to offer opportunities for reading and historical investigation in significant problems. Juniors as well as seniors may apply for admission to these courses, and are urged to do so if they expect to be candidates for graduation with distinction in History or if they expect to practice-teach in their senior year. All seminars are open to non-majors as well as to majors.

195A-196A. *Renaissance Intellectual History.* 6 s.h. *Krantz*

195B-196B. *Twentieth-Century Europe.* 6 s.h. *Colton*

195C-196C. *Problems in American Intellectual History. (Students may not receive credt for this course and 249-250.)* 6 s.h. *Holley*

195D-196D. *The Progressive Era Through the New Deal.* 6 s.h. *Watson*

195E-196E. *American History Before 1789.* 6 s.h. *Alden*

195F-196F. *Problems in Nineteenth-Century American Reform and Politics. (Students may not receive credit for this course and 163-164.)* 6 s.h. *Durden*

195G-196G. *Nationalism and Communism in the Far East.* 6 s.h. *Uhalley*

195H-196H. *From Rural to Urban Society in the United States.* 6 s.h. *A. Scott*

195I-196I. *Nationalism and Freedom in Nineteenth-Century Europe.* 6 s.h. *Hollyday*

195J-196J. *Studies in the History of Socialism and Communism.* 6 s.h. *Lerner*

195K-196K. *European Expansion and Imperialism.* 6 s.h. *Cell*

195L-196L. *Europe in the Age of the Reformation, 1500-1650.* 6 s.h. *Hillerbrand*

195N-196N. *The English Renaissance.* 6 s.h. *Ferguson*

195Q-196Q. *Class and Social Mobility in English History.* 6 s.h. *Ginter*

195R-196R. *The Age of Newton.* 6 s.h. *Mauskopf*

195S-196S. *Processes of Development in Modern Japan, 1800 to the Present.* 6 s.h. *Silberman*

195T-196T. *Problems in the History of Russia Before 1917.* 6 s.h. *Rainey*

195U-196U. *Social Conflict and Political Parties from Jackson to Grant.* 6 s.h. *Nathans*

196.99. *History Honors Pro-Seminar.* Required in the spring semester of juniors selected for the Senior Honors Seminar of the following year. Conferences on selection of research topics and research techniques. 1 s.h. *Holley and Parker*

197-198. *Senior Honors Seminar.* 6 s.h. *Holley and Parker*

Departmental Major

Prerequisite. The introductory course in History (1-2 or 51-52).

Major Requirements. Students desiring to take a major in history are required to elect, in addition to History 1-2 or 51-52, 24 semester hours in the Department, including six semester hours in either an undergraduate seminar (195-196) or any course in the 200 group. Students are urged to take History 91-92; in any case those wishing to take the more advanced courses in American history should elect History 91-92 in the sophomore or junior year.

Honors. Any student who is qualified (see the section on Honors in this *Bulletin* for general requirements) may undertake work leading to a degree with distinction in History by presenting himself to his History faculty advisor as a candidate. Normally, Honors work involves participation in one of the Undergraduate Seminars during the junior year and selection for the Senior Honors Seminar in the senior year. Further information is available at the History Department office, 236 Allen, West Campus, or 102 West Duke Bldg., East Campus.

Courses Approved for Related Work in History

Anthropology.

Art. History of Art

Economics.

Education. 113, 114, 225

English and American Literature.

German, Greek, Latin, Russian, and the Romance Languages. The literature courses that are not primarily conversation or composition

Greek, Latin. Except those courses that are primarily grammar on composition

Interdisciplinary. 101, 102, 199

Linguistics. 101.

Music. History of Music
Philosophy. Except 48
Political Science.
Psychology. 91, 100, 101. And other courses if specifically approved
Religion. Especially those numbered above 100
Sociology.

Interdisciplinary Courses

The following are cooperative courses offered by the departments concerned. Where a department accepts the course for the major, the same number is used as a departmental offering. Certain other departments accept these courses as related work.

101, 102. *Introduction to the Civilizations of Southern Asia.* 6 s.h. *Apte, Braibanti, Embree, McCormack, Reed, Rowe, Spengler, Sullivan*
103. *Introductory Journalism.* 1 s.h. *Spearman*
105. *Mass Media in Contemporary Society.* 3 s.h. *Clark*
107, 108. *African Civilizations.* 1 s.h. each semester. *Graham*
199. *The Changing South.* 3 s.h.

Italian

For courses offered in Italian, see *Romance Languages.*

Latin

For courses offered in Latin, see *Classical Studies.*

Linguistics

The courses in Linguistics may be taken as electives by advanced students; certain courses serve as related work in several departments (see the entries for related work under the separate departments).

No major is offered in Linguistics. Students interested in the study of language as a part of their undergraduate program or as a preparation for graduate work in linguistics should consult the instructors of the courses listed below.

101. *Introduction to Linguistics.* Origin and nature of language, methods of descriptive linguistics with reference to historical and comparative linguistics. No specific prerequisite except sophomore standing. 3 s.h. *Ullrich*

For a description of the following courses consult the listings under the specified department.

Language and Society (Anthropology 238) *Apte*
Linguistic Anthropology (Anthropology 260, 261) *Apte*
Development of the English Language (English 161)
Modern English Grammar (English 162)
Old English Grammar and Readings (English 207) *Nygard*
History of the English Language (English 208) *Nygard*
Old French Literature (French 219) *Vincent*
Middle High German (German 205, 206) *Boletta*
History of the German Language (German 216) *Boletta*
Symbolic Logic (Philosophy 103) *Clark and Wilson*
Philosophy of Language (Philosophy 109) *Welsh*
General Semantics and Theory of Language (Philosophy 246) *Wilson*
Romance Linguistics (Romance Languages 224) *Hull*
Old Spanish Language. (Spanish 257) *Davis*

Mathematics

Professor Warner, *Chairman*; Professor Dressel, *Director of Undergraduate Studies*; Associate Professor Reynolds, *Supervisor of Freshman Instruction*; Professors Carlitz, Gallie, Murray, Roberts, Shoenfield, and Woodbury; Visiting Professors Davis and Hirschman; Adjunct Professor Sewell; Associate Professors Bryson, Burdick, Burlak, Kitchen, Smith, Stackelberg, Weisfeld, and Williams; Assistant Professors Caviness, Dankel, Henson, Herr, Hodel, Moore, O'Fallon, O'Neill, Patrick, Scoville, Shauck, and Wilkinson; Instructors Mrs. Caviness, Entwhistle, Katz, Schorr, and Smith; Visiting Instructor (part-time) Schroeder

The following program of courses in Mathematics is planned for 1969-70.

Fall. 17, 22, 51, 63, 112, 113, 133, 135, 139, 181, 217, 221, 235, 245, 271, 283, 285, 291, 293.

Spring. 51, 63, 68, 111, 114, 126, 128, 131, 133, 136, 140, 152, 187, 204, 218, 222, 236, 246, 272, 284, 286, 292, 295.

17. *Introduction to Finite Mathematics.* Prerequisite: three units of college preparatory mathematics. 3 s.h. *Staff*

21, 22. *Introductory Calculus.* Prerequisite: three units of college preparatory mathematics. Mathematics 21 is prerequisite for Mathematics 22. 6 s.h. *Staff*

41, 42. *Introductory Calculus.* Prerequisite: for units of college preparatory mathematics. 6 s.h. *Staff*

51. *Introduction to Digital Computation.* Prerequisite: three units of college preparatory mathematics. 3 s.h. *Gallie*

63. *Intermediate Calculus.* Prerequisite: Mathematics 22. 3 s.h. *Staff*

68. *Introduction to Linear Algebra.* Prerequisite: Mathematics 17 or 21. 3 s.h. *Staff*

83. *Intermediate Calculus.* Prerequisite: Mathematics 42; or permission of the Director of Undergraduate Studies in Mathematics. 3 s.h. *Staff*

111. *Applied Mathematical Analysis I.* Prerequisite: Mathematics 63. 3 s.h. *Staff*

112. *Applied Mathematical Analysis II.* Prerequisite: Mathematics 63. 3 s.h. *Staff*

113, 114. *Modern Algebra.* Prerequisite: Mathematics 68 for 113; and 113 for 114. 6 s.h. *Staff*

126. *Introduction to Linear Programming and Game Theory.* Prerequisites: Mathematics 22 and 68 or consent of the instructor. 3 s.h. *Staff*

128. *Number Theory.* Prerequisite: Mathematics 63. 3 s.h. *Staff*

131. *Elementary Differential Equations.* Prerequisite: Mathematics 63. 3 s.h. *Staff*

133. *Basic Statistics.* 3 s.h. *Burdick*

135, 136. *Probability and Statistics.* Prerequisite: Mathematics 63 for 135; 68 and 135 for 136. 6 s.h. *Burdick*

139, 140. *Advanced Calculus.* Prerequisite: Mathematics 63 for 139; and 139 for 140. 6 s.h. *Staff*

141, 142. *Junior Mathematics Seminar.* Prerequisite: Mathematics 68 and 83 for 141; and 141 for 142; or permission of Director of Undergraduate Studies. 6 s.h. *Staff*

152. *Non-numerical Computation.* Prerequisites: Math 22, 51 and 68, or consent of the Instructor. 3 s.h. *Caviness*

171. *Elementary Topology.* Prerequisite: Mathematics 63. 3 s.h. *Staff*

181. *Complex Analysis.* Prerequisite: Mathematics 63. 3 s.h. *Staff*

187. *Introduction to Mathematical Logic.* Prerequisites: Mathematics 63 or 68, or Philosophy 103. 3 s.h. *Henson*

191, 192. *Independent Study.* Open to highly qualified juniors and seniors. 6 s.h. *Staff*

For Seniors and Graduates

204. *Geometry for Teachers.* 3 s.h. *Reynolds*

217, 218. *Intermediate Analysis.* Prerequisite: Mathematics 63 for 217; and 217 for 218. 6 s.h. *O'Neill*

221, 222. *Numerical Analysis.* Prerequisite: Mathematics 63 for 221, and 221 for 222. 6 s.h. *Patrick*

227, 228. *Theory of Numbers.* Prerequisite: Mathematics 63 for 227; and 227 for 228. 6 s.h. *Carlitz*

229, 230. *Algebraic Numbers.* Prerequisite: Mathematics 113 for 229; and 229 for 230. 6 s.h. *Carlitz*

234. *Sample Designs.* Prerequisite: Mathematics 133. 3 s.h. *Bryson*

235, 236. *Abstract Algebra.* Prerequisite: Mathematics 114 for 235; and 235 for 236. 6 s.h. *Smith*

244. *Design of Experiments.* Prerequisite: Mathematics 133. 3 s.h. *Burdick*

245, 246. *Combinatorial Analysis.* Prerequisite: Calculus. 6 s.h. *Carlitz*

247, 248. *Arithmetic of Polynomials.* Prerequisite: Mathematics 235 or consent of the instructor for 247; and 247 for 248. 6 s.h. *Carlitz*

262. *Non-Parametric Statistics.* Prerequisite: Mathematics 244, or consent of the instructor. 3 s.h. *Bryson*

271, 272. *Introductory Topology.* Prerequisite: Calculus. 6 s.h. *Hodel*

273, 274. *Algebraic Topology.* Prerequisite: Mathematics 272. 6 s.h. *Staff*

275, 276. *Probability.* Prerequisite: Mathematics 135; or calculus and consent of the instructor. 6 s.h. *Stackelberg*

283. *Applied Mathematical Statistics.* Prerequisite: Mathematics 63. 3 s.h. *Herr*

284. *Least Squares Analysis of Linear Models.* Prerequisite: Mathematics 136 or 283. 3 s.h. *Burdick*

285. *Applied Mathematical Methods I.* Prerequisite: Mathematics 63. 3 s.h. *Dressel*

286. *Applied Mathematical Methods II.* Prerequisite: Mathematics 63. 3 s.h. *Dressel*

287, 288. *Foundations of Mathematics.* Prerequisite: Mathematics 114 or Philosophy 103, or consent of the instructor. 6 s.h. *Shoenfield*

289. *Applications of Stochastic Processes I.* Prerequisite: Mathematics 135 and 140, or consent of the instructor. 3 s.h. *Wilkinson*

290. *Applications of Stochastic Processes II.* Prerequisite: Mathematics 289 or consent of the instructor. 3 s.h. *Wilkinson*

291, 292. *Analysis I. II.* Prerequisite: Mathematics 218 or 140, or consent of the instructor. 6 s.h. *Moore*

293. *Multivariate Statistics.* Prerequisite: Mathematics 284, or consent of the instructor. 3 s.h. *O'Fallon*

295. *Mathematical Foundations of Statistical Inference.* Prerequisite: Mathematics 275, or consent of the instructor. 3 s.h. *Herr*

297, 298. *Axiomatic Set Theory.* Prerequisite: consent of the instructor. 6 s.h. *Shoenfield*

Departmental Major

For the A.B. degree:

Prerequisite. Mathematics 21, 22.

Major and Related Work. 42 semester hours.

Major Requirements. Mathematics 63, 68, and 18 semester hours in courses in mathematics numbered above 100, exclusive of Mathematics 133.

Related Work. 18-24 semester hours of course work from the following departments: Chemistry, Economics and Business Administration, Philosophy, Physics. Two courses above the introductory level must be taken in at least one of these departments.

For the B.S. degree:

Prerequisite. Mathematics 21, 22.

Major and Related Work. 48 semester hours.

Major Requirements. Mathematics 63, 68, and 18 semester hours in courses in mathematics numbered above 100, exclusive of Mathematics 133.

Related Work. 14-24 semester hours of course work in the natural sciences. Two courses above the introductory level must be taken in at least one of these departments.

The Department offers work leading to graduation with distinction. See the section on Honors in this *Bulletin.*

Medical Science

This course in medical science has been approved by the Faculty Council as appropriate for the Bachelor's degree.

M151. *Anatomy of the Lower Extremities as it Relates to Locomotion.* 3 s.h. *Bassett*

Music

Professor J. Mueller, *Chairman*; Associate Professor E. Saville, *Director of Undergraduate Studies*; Professors Bone, Hamilton, and Hanks; Associate Professors Bryan, Earls, W. Kirkendale and Withers; Resident Artist Ciompi; Assistant Professors L. Di Cecco, Hendrix and Henry; Instructor Talbot; Visiting Lecturer U. Kirkendale; Staff Associates A. Di Cecco, Hester, Madden, McCall and Phelps

Courses in music are offered for the general student who wishes to acquire knowledge of music as literature and, on a more technical level, for those prepared to major in the field.

Theory and Composition

65, 66. *Music Theory I.* 8 s.h. *Earls and Bryan*

67, 68. *Composition I.* Prerequisite: Music 66 or consent of the instructor. 4 s.h. *Earls and Hamilton*

115, 116. *Music Theory II.* Prerequisite: Music 65-66. 6 s.h. *Earls and Bryan*

117, 118. *Music Theory III.* Prerequisite: Music 115-116 or consent of the instructor. 4 s.h. *Hamilton and Earls*

122. *Orchestration.* Prerequisites: Music 65, 66, 115, 116 or consent of the instructor. 3 s.h. *Bryan and Earls*

History and Literature

51-52. **Introduction to Music Literature.* 6 s.h. *Staff*

51X-52X. *Introduction to Music Literature.* 6 s.h. *Staff*

125. **Masterworks of Music Literature.* 3 s.h. *Bone, Hamilton, and Mueller*

134. **Choral Literature.* 3 s.h. *Saville*

135. *Piano Literature.* Prerequisites: Music 47.1, 48.1, 97.1, and 98.1, or consent of the instructor. 3 s.h. *Withers*

136. *Solo Song Literature.* Open to voice students and others by consent of the instructor. 3 s.h. *Hanks*

139. **Twentieth-Century Music.* Prerequisite: a one-year course in Music Theory or Literature, or consent of the instructor. 3 s.h. *Hamilton*

149. *Organ Literature.* Open to organ students and others by consent of the instructor. 3 s.h. *Hendrix*

161-162. *History of Music.* Prerequisite: a one-year course in Music Theory or Literature (preferably Music 51X-52X), or consent of the instructor. 6 s.h. *Saville*

163. **Music in the Eighteenth Century.* 3 s.h. *Bryan*

164. **Music in the Nineteenth Century.* 3 s.h. *Mueller*

165. **Opera Literature.* 3 s.h. *Saville*

173. **World Music.* 3 s.h. *Earls*

Independent Study and Senior Seminar

Admission to these courses will be subject to approval of the Director of Undergraduate Studies of the Department of Music and the individual instructor. The instructor as well as the course content will be established in accordance with the individual student's interests and capacities.

The Department offers work leading to graduation with distinction. See the sections on academic honors and special curricular programs on pages 54 and 55.

191, 192. *Independent Study.* Open only to highly qualified students in the junior year, by permisseion of the department. 6 s.h. *Staff*

193, 194. *Independent Study.* 6-12 s.h. *Staff*

195, 196. *Senior Seminar in Music.* 6 s.h. *Staff*

*Courses marked with an asterisk are open to general students without prerequisite.

Music Education and Pedagogy

57-58. *Vocal Diction.* 2 s.h. *Hanks*

106. *Piano Methods and Materials.* Prerequisite: Music 47.1, 48.1, 97.1, and 98.1, or consent of the instructor. 3 s.h. *Withers*

121. *Conducting.* Prerequisites: Music 65-66, 115-116 or consent of the instructor. 3 s.h. *Bone*

145-146. *Techniques of Keyboard Ensemble and Accompanying.* Prerequisite: a working level of keyboard efficiency. 4 s.h. *Talbot*

151. *Public School Music Education (Elementary).* 3 s.h. *McCall*

152. *Public School Music Literature (Elementary).* 3 s.h. *McCall*

153. *Vocal Music in the Public School (Secondary).* 3 s.h. *Saville*

154. *Instrumental Music in the Public School (Secondary).* 3 s.h. *Bone*

Applied Music

The study of Applied Music concerns the understanding of music literature through performance. Instruction is offered in the following media: 1. Piano; 2. Strings; 3. Woodwinds; 4. Brass; 5. Voice; 6. Ensemble —Instrumental, Piano, Vocal coaching and performance; participation through one of the Departmental Ensembles listed at close of the Music section; 7. Organ. Instruction in media 1 through 5 may be private or in classes limited to a minimum of four and a maximum of seven students. Class instruction is restricted to the first four grades of proficiency. Class instruction shall be designated by adding the letter X to the appropriate medium and year-in-school classification. (Example: junior year, Woodwinds, class instruction is recorded 147.3X.)

Students must arrange an audition with the instructor *prior to registration in Applied Music courses.* The course numbers listed below refer to the student's class standing and not his musical proficiency.

Piano. 47.1, 48.1; 97.1, 98.1; 147.1, 148.1; 197.1 For freshmen, sophomores, juniors, seniors. 1 or 2 s.h. *Withers, Phelps, Talbot, and Hester*

Violin, Viola, 'Cello. 47.2, 48.2; 97.2, 98.2; 147.2, 148.2; 197.2, 198.2. For freshmen, sophomores, juniors, seniors. 1 or 2 s.h. *Ciompi, Di Cecco, and J. Mueller*

Woodwinds. 47.3, 48.3; 97.3, 98.3; 147.3, 148.3; 197.3, 198.3. For freshmen, sophomores, juniors, seniors. 1 or 2 s.h. *Henry*

Brass. 47.4, 48.4; 97.4, 98.4; 147.4, 148.4; 197.4, 198.4. For freshmen, sophomores, juniors, seniors. 1 or 2 s.h. *Bryan*

Voice. 47.5, 48.5; 97.5, 98.5; 147.5, 148.5; 197.5, 198.5. For freshmen, sophomores, juniors, seniors. 1 or 2 s.h. *Hanks and Madden*

Ensemble. 47.6, 48.6; 97.6, 98.6; 147.6, 148.6; 197.6, 198.6. For freshmen, sophomores, juniors, seniors. 1 s.h. *Staff*

Organ. 47.7, 48.7; 97.7, 98.7; 147.7, 148.7; 197.7, 198.7. For freshmen, sophomores, juniors, seniors. 1 or 2 s.h. *Hendrix*

Credits. Credit for instruction in media 1, 2, 3, 4, 5, and 7 is granted on the basis of 2 s.h. per semester for *one hour* of private instruction per week and a minimum of six hours practice weekly; or 1 s.h. per semester for *one-half hour* of private instruction, or one period of class study, and a minimum of six hours practice per week. An additional weekly class meeting for performance and criticism may be required by the instructor without additional credit.

Credit for instruction in medium 6 is granted on the basis of 1 s.h. per semester for one rehearsal period of instruction and a minimum of three hours practice per week.

Music majors. Shall plan their Applied Music study so as to meet the following requirements of their chosen areas of concentration:

Majors in Music Theory or Music History and Literature should earn a minimum of 6 s.h. credit in Applied Music.

Majors in Applied Music must register for one hour of private instruction *per semester* and may earn a maximum of 18 s.h. credit in Applied Music.

Majors in Music Education who expect to teach music in the public schools should plan their Applied Music programs in consultation with the Director of Undergraduate Studies in Music. The credit hours in Applied Music required for certification in North Carolina may be earned through a program which includes the study of a major medium, a minor medium and participation in departmental organizations. (See p. 12 of this *Bulletin*).

Nonmajors. Students other than music majors may receive not more than 8 s.h. credit for work in Applied Music. They may elect after consultation with the Department either 1 hour (2 s.h. credit) or ½ hour (1 s.h. credit) of private instruction per semester. *No credit in Applied Music* will be allowed unless the student satisfactorily completes at some time before graduation six semester hours in Music Theory, or Music History and Literature.

Fees. Upper class students who have been accepted as music majors at the time of registration for applied music courses are exempt from paying the applied music fees. Other students are charged for all applied music media except "6" (Ensemble).

Fees are payable to the Treasurer's office of Duke University upon notification from that office at the beginning of each semester as follows:

One ½ hour private lesson per week for one semester	$ 60.00
Two ½ hour private lessons per week or one 1-hour private lesson per week for one semester	100.00
One 1-hour class lesson per week for one semester	25.00

All students registered for applied music instruction are charged for practice room facilities—students having practice facilities off campus *must*

notify the departmental office of this fact by the end of the third week of *each* semester; otherwise they will be automatically billed as follows:

Medium 1. Piano Medium 5. Voice Medium 7. Organ	$20.00 per semester (room with piano or organ
Medium 2. Strings Medium 3. Woodwinds Medium 4. Brass	$15.00 per semester (room without piano)
Medium 6. Ensemble	No practice room fee is charged

Departmental Major

Prerequisites. Music 51-52 and 65-66.

Major Requirements. A minimum of 24 s.h. beyond the prerequisite courses including Music 115-116 and 147-148. Participation in one of the departmental Ensembles or Organizations during *each* semester of undergraduate study.

During Orientation Week all prospective entering Freshman Music Majors are required to take: A. Piano proficiency exam., B. Theory proficiency exam., C. Audition in their major performance medium.

Related Work. Eighteen semester hours, which may include courses above the freshman level in history, languages and literature, art, religion, or topics deemed pertinent to the student's program by the faculty advisor. Courses must be taken in at least two departments.

Areas of Upperclass Specialization

Concentration in one of four major areas in Music is possible in the junior and senior years. While the following outlines include more than the number of hours *required* for a major in music, they are strongly recommended by the Department as a basis for effective study.

Theory and Composition

Required: Music 117-118, 122; Applied Music: 6 s.h.

Additional Departmental Recommendations: Music Electives: 6 s.h.

History and Literature

Required: 2 Elective Courses in Music Literature; plus Music 197, 198; Applied Music: 2 s.h.

Additional Departmental Recommendations: Music Electives: 10 s.h., including a minimum of 4 s.h. in Applied Music.

Applied Music. A program of study designed for those students who intend to become performers and teachers of applied music.

Required: Applied Music: 12 s.h.

Additional departmental recommendations: Applied Music: 6 s.h.; Piano or Organ: Music 135 or 149; 106 (Piano Majors only); Voice:

Music 136; 57-58; Other Media: Study sequence to be worked out in consultation with the Director of Undergraduate Studies.

Music Education. A program of study designed for prospective teachers of High School Instrumental or Vocal Music. Details of this program are given under Music Education.

Departmental Ensembles

Brass Ensemble
Chamber Orchestra
Madrigal Singers
Piano Ensemble (may be in combination with Instruments or Voice)
String Ensemble (Sonata, Trio or Quartet)
Vocal Ensemble (Opera Workshop)
Woodwind Quintet

Departmental Organizations

Duke University Concert Band
Duke University Symphony Orchestra
Duke University Marching Band

Naval Science

Professor Cocowitch, Captain, U.S. Navy, *Chairman*; Associate Professor Berkley, Commander, U.S. Navy, *Director of Undergraduate Studies*; Assistant Professors: Ram, Major, U.S. Marine Corps; Barker, Lieutenant, U.S. Navy; Renager, Lieutenant, U.S. Navy; Thach, Lieutenant, U.S. Navy; Martin, Lieutenant, U.S. Navy

Standardized titles and numbers for courses are established by the Bureau of Naval Personnel for use at the 52 NROTC institutions. The first digit indicates the year of the course; the second digit (0) indicates that it is given on a semester basis; the third digit indicates the semester of the school year in which offered. Specialized courses for Marine Corps Officer candidates are indicated by the letter "M" after the number, and substitute for the basic course of the same number.

Note: Completion of all Naval Science Courses listed is required for a commission. A maximum of four Naval Science Courses may be offered as electives in satisfying degree requirements in Trinity College; only two Naval Science Courses (junior or senior level) can be so offered in the School of Engineering.

NS 101. *Principles of Naval Organization and Management. Thach*
NS 102. *Naval Ships Systems. Thach*

NS 201-202. *Drills; Seapower and Maritime Affairs Seminar.* No credit. *Ram, Martin*

NS 301. *Navigation. Barker*

NS 302. *Naval Operations. Barker*

NS 401. *Naval Weapons Systems I.* Prerequisites: N.S. 301, 302. *Renager*

NS 402. *Naval Weapons Systems II.* Prerequisites: 401. *Renager*

NS 301 M. *Evolution of the Art of War. Ram*

NS 302 M. *Modern Basic Strategy and Tactics. Ram*

NS 401 M. *Amphibious Warfare. Ram*

NS 402 M. *Amphibious Warfare, Part II. Ram*

Nursing

The nursing program is published separately in the *Bulletin of the School of Nursing.* (See inside of front cover.)

Philosophy

Professor Welsh, *Chairman*; Professor Wilson, *Director of Undergraduate Studies*; Assistant Professor Mahoney, Supervisor of Freshman Instruction; Professors Baylis, Clark, Negley, Peach, and Welsh; Assistant Professors, Aquila, Kalke and Feenberg

The undergraduate program in the Department of Philosophy is designed to acquaint students with the content and the structure of philosophical theory in various areas. Discussion is encouraged so that the student can engage actively in the philosophical examination of problems.

Course offerings fall into two general categories: the systematic and the historical. In a systematic treatment, the organization of a course is primarily in terms of the problems presented by the subject-matter of that course, as in logic, ethics, metaphysics, etc. In historical courses, attention is directed more to the order of development in the thought of a particular philosopher (Plato, Aristotle, Kant, etc.), or in a historical period. In all courses, reading of the works of philosophers will acquaint the students with the important and influential contributions to the definition and solution of philosophical issues.

The problems raised in philosophy in respect to the various fields of the arts and sciences involve questions which are not normally given attention in those particular disciplines. In the consideration of such problems, therefore, it is expected that the student will acquire some understanding and perspective of the major areas of man's intellectual endeavor. In this

sense, philosophical comprehension is an essential part of a student's learning and education.

41, 42. *Knowledge, Fact, and Value.* Philosophy 42 may be taken before, or with, Philosophy 41. Not open to juniors and seniors. 6 s.h. *Staff*

43, 44. *Freshman Tutorials.* 1 s.h. *Clark, Peach*

48. *Logic.* 3 s.h. *Clark, Kalke, and Welsh*

93, 94. *History of Philosophy: Ancient and Modern.* 6 s.h. *Aquila, Feenberg, Mahoney, Peach, and Wilson*

101. *Philosophy of Religion.* 3 s.h.

103. *Symbolic Logic.* Open to sophomores by permission of instructor. 3 s.h. *Clark and Wilson*

104. *Philosophy of Science.* 3 s.h. *Kalke*

107. *Political and Social Philosophy.* 3 s.h. *Negley*

108. *Social Ideals and Utopias.* 3 s.h. *Negley*

109. *Philosophy of Language.* 3 s.h. *Welsh*

110. *Epistemology.* 3 s.h. *Baylis*

111. *Metaphysics.* Prerequisite: one course in philosophy. 3 s.h. *Wilson*

117. *Ancient and Modern Ethical Theories.* 3 s.h. *Welsh*

119. *Introduction to Medieval Philosophy.* 3 s.h. *Mahoney*

120. *Nineteenth Century Philosophy.* 3 s.h. *Feenberg*

121. *Introduction to Phenomenology.* 3 s.h. *Feenberg*

122. *Existentialism.* Prerequisite: Philosophy 121 or permission of the instructor. 3 s.h. *Feenberg*

For Seniors and Graduates

202. *Aesthetics: The Philosophy of Criticism.* Open to juniors with the approval of the instructor. 3 s.h. *Welsh*

203. *Contemporary Ethical Theories.* 3 s.h. *Baylis*

205. *The Philosophy of History.* 3 s.h. *Negley*

208. *Political Values.* 3 s.h. *Negley*

211. *Plato.* 3 s.h. *Mahoney*

217. *Aristotle.* 3 s.h. *Mahoney*

218. *Medieval Philosophy.* 3 s.h. *Mahoney*

219. *Kant.* 3 s.h. *Negley*

225. *British Empiricism.* 3 s.h. *Peach*

227. *Continental Rationalism.* 3 s.h. *Peach*

228. *Recent and Contemporary Philosophy.* 3 s.h. *Welsh*

229. *American Pragmatism.* 3 s.h. *Welsh*

231. *Classical German Philosophy.* 3 s.h. *Aquila*

233. *Introduction to the Philosophy of Science..* 3 s.h. *Kalke*

234. *Philosophy of Science.* Prerequisite: consent of the instructor. 3 s.h. *Kalke*

235. *Philosophy and the Sciences.* 3 s.h. *Kalke*

The above two courses are normally given alternate Spring semesters.

241. *Logic.* 3 s.h. *Clark and Wilson*

246. *General Semantics and Theory of Language.* Prerequisite: Philosophy 103 or the equivalent. 3 s.h. *Wilson*

247. *Philosophical Cosmology.* 3 s.h. *Wilson*

250. *Philosophical Analysis.* 3 s.h. *Baylis and Clark*

251. *Epistemology.* 3 s.h. *Baylis*

252. *Metaphysics.* 3 s.h. *Baylis and Clark*

253. *Philosophy of Mind.* 3 s.h. *Aquila and Clark*

291, 292. *Critical Philosophy.* 3 s.h. each. Enrollment only by permission of the department. 291 is ordinarily prerequisite for 292. *The Graduate Staff*

Departmental Major

Philosophy 48 (Logic) is recommended for all those intending to major in philosophy. Philosophy 41, 42 is ordinarily a prerequisite to major work.

Major requirements. 24 semester hours in philosophy of which at least eighteen must be in courses numbered above 48. The following must be included: Philosophy 93, and 94; Philosophy 117, or 203, or 208; and 6 semester hours in Philosophy senior-graduate courses.

Related Work. Six hours minimum in each of two departments approved by the philosophy adviser. Courses may not be those primarily open to freshmen. There is no restriction in principle as to departments in which related work may be taken, and the approval of the Philosophy adviser is required only to insure some coherence in the program of major and related work as a whole.

The Department offers work leading to graduation with distinction. See the section on Honors.

Physics

Professor Fairbank, *Chairman*; Professor Meyer, *Director of Undergraduate Studies*; Professor Carpenter, *Supervisor of Freshman Instruction*; Professors Biedenharn, Fowler, Gordy, Greuling, Lewis, and Newson; Associate Professors Bilpuch, Evans, Roberson, Robinson, and Walter; Assistant Professors Beres, Binkley, Carpenter, Cook, Fortney, Guyer, Han, Hayne, Poore, Rose, and Sykes; Instructors Cook and Lipshutz

1-2. *Introductory Physics.* 8 s.h. *Carpenter, Hayne, Poore, and assistants*

41-42. *Fundamentals of Physics.* Prerequisites: approval of the department; Mathematics 21-22 or equivalent (may be taken concurrently). 8 s.h. *Rose*

51-52. *General Physics.* Prerequisites: Mathematics 21, 22 or equivalent (may be taken concurrently). 8 s.h. *Fairbank, Fowler, Greuling, Han, Lewis, Robinson, Walter and assistants*

161, 162. *Modern Physics.* Prerequisites: Physics 41-42, Mathematics 22. 161 is prerequisite for 162. 6 s.h. *Evans and Lipshutz*

171. *Electronics.* Prerequisite: Physics 41-42. 4 s.h. *Roberson*

176. *Thermodynamics and Kinetic Theory.* Prerequisites: Physics 41-42, and differential and integral calculus. 3 s.h. *Meyer*

181-182. *Classical Mechanics.* 6 s.h. *Beres*

A course in general college physics, validated by examination, and a course in differential and integral calculus are prerequisites to all courses numbered 200 and above.

209. *Introduction to Solid State Physics.* 3 s.h.

215. *Introduction to Quantum Mechanics.* Prerequisites: Physics 162, 182 or equivalents; Mathematics 285-286 should be taken concurrently. 3 s.h. *Evans*

217, 218. *Advanced Physics Laboratory.* 6 s.h. *Meyer*

220. *Advanced Electronics.* 4 s.h. *Roberson*

221, 222. *Theoretical Physics.* Prerequisite: Mathematics 285-286 or equivalent to be taken at least concurrently. 6 s.h. *Cook*

223. *Electricity and Magnetism.* 3 s.h. *Carpenter*

224. *Electricity and Magnetism.* Prerequisite: Physics 223. 3 s.h. *Carpenter*

225, 226. *Elementary Investigations.* 3-6 s.h. *Staff*

Departmental Major

A student wishing to major in physics should arrange to complete the necessary mathematics as soon as possible. Special sections (denoted by "x" in the course schedule) have been arranged in Physics 161-162. These sections are primarily for physics majors, and it is recommended that persons planning to major in physics should attempt to fit them into their schedules. This recommendation is not a requirement however. Since Physics 1-2 is intended primarily for non-science majors, it is not recommended for physics majors.

For the A.B. degree:

Prerequisites. Physics 1-2 or 41-42 or 51-52 or equivalent, and Mathematics 21, 22.

Major Requirements. At least 18 semester hours in physics from Physics 161, 162, 171, 176, 217, 218, 181, 182, 223, 224, 215.

Related Work. Eighteen to 24 semester hours from the following courses: Mathematics 63, 64, 131, 139, 140, and Chemistry 1, 2 or 1 and 42.

For the B.S. degree:

Prerequisites. Physics 1-2 or 41-42 or 51-52 or equivalent, and Mathematics 21, 22 or equivalent.

Major Requirements. Physics 161, 162, 171, 176, 181, 182, 223, 224, 217, and 218.

Related Work. Fourteen to 24 semester hours from the following courses: Mathematics 63, 64, 131, 139, 140, and Chemistry 1, 2 or 1 and 42.

The department offers to the student in his senior year the possibility of being associated with research conducted in this institution. Such work may lead to graduation with distinction. See the section on Honors.

Political Science

Professor Hallowell, *Chairman*; Associate Professor Cook, *Director of Undergraduate Studies*; Professors Ball, Braibanti, Cole, Hall, Kulski, Leach Proctor, Rankin, Simpson and Thomas; Adjunct Professor Grzybowski; Associate Professor Kornberg; Assistant Professors Braithwaite and Spragens; Instructors Paletz and Rowlands.

The objective of the Department of Political Science is to acquaint students with the theory and practice of government and politics at the local, state, national and international levels. While primary attention is focused upon the American political and administrative system, emphasis is also placed upon a comparative study of the political institutions and movements of thought peculiar to the nations of Europe, Latin America, Africa and Southern Asia. The student's attention is also directed to the problems encountered in international organization, politics and law. The development of political philosophy from Plato to the present day is an essential part of the department's course offerings. Methods of study include the empirical, the historical, the legal, the comparative and the philosophical.

Directing its effort to an intelligent understanding of the contemporary world and of the responsibilities which are laid upon citizens of a democracy, the Department of Political Science shares the objectives of a liberal arts education. While the department does not aim at vocational education, the knowledge it seeks to impart should be useful to anyone contemplating a career in law, the government service, or politics.

Students intending to major in the department should take Political Science 11 or 61. Ordinarily one of them must be taken before proceeding to more advanced work in the department. This rule may be waived with the consent of the Director of Undergraduate Studies.

The advanced courses are divided into four major groups. Majors are required to take at least three semester hours in three of these groups.

Political Science 197 and 198 are designed to provide an opportunity for majors in the department to qualify for graduation with distinction.

Introductory Courses

11. *The American Political System.* Freshmen only. 3 s.h. *Braithwaite, Paletz, Spragens, and Rowlands*

61. *The American Political System.* (Not open to freshmen.) 3 s.h. *Leach, Simpson, Cook, Kornberg, and Paletz*

Students planning to major in Political Science or students seeking to meet the Social Science requirement should follow Political Science 11 or 61 with a 100 level course of their choice.

Political Theory and Methodology

123. *Introduction to Political Philosophy.* 3 s.h. *Hallowell and Spragens*

127. *Introduction to Law.* 3 s.h. Open only to juniors and seniors. *Spragens*

131. *Introduction to American Political Thought.* 3 s.h. *Cook*

132. *Contemporary Political Ideologies.* 3 s.h. *Cook*

197. *Principles and Methods of Political Inquiry.* Prerequisites: nine semester hours in political science and consent of the instructor. 3 s.h. *Braithwaite*

222. *Empirical Theory and Methodology.* 3 s.h. *Braithwaite*

223. *Political Philosophy from Plato to Machiavelli.* 3 s.h. *Hallowell*

224. *Modern Political Theory.* 3 s.h. *Hallowell*

229. *Recent and Contemporary Political Theory.* 3 s.h. *Hallowell*

231. *American Political Theory.* 3 s.h. *Cook*

249. *Comparative Political Analysis and Political Development.* 3 s.h. *Braibanti*

Comparative Government and Politics

136. *Comparative Government and Politics: Europe.* 3 s.h. *Kornberg and Rowlands*

155. *Problems of Political Development in the New States.* 3 s.h. *Rowlands*

165. *The Government and Politics of the U.S.S.R.* 3 s.h. *Kulski*

166. *Soviet Foreign Relations.* 3 s.h. *Kulski*

180. *Comparative Government and Politics: Southern Asia I.* 3 s.h. *Braibanti*

181. *Comparative Government and Politics: Southern Asia II.* 3 s.h. *Braibanti*

214. *Comparative Administrative Law.* 3 s.h. *Gryzbowski*

225. *Comparative Government and Politics: Western Europe.* 3 s.h. *Cole*

235. *The British Commonwealth.* 3 s.h .*Cole*

250. *Comparative Government and Politics: Southern Asia.* 3 s.h. *Braibanti*

253. *Comparative Government and Politics: Latin America.* 3 s.h. *Ball*

277. *Comparative Party Politics.* 3 s.h. *Kornberg*

280. *Comparative Government and Politics: Sub-Saharan Africa.* 3 s.h. *Proctor*

American Government and Public Administration

109. *State and Local Government Today.* 3 s.h. *Leach*

125. *American Political Parties and Practical Politics.* 3 s.h. *Simpson*

128. *The Judicial Process.* 3 s.h.

129. *Group in American Politics.* 3 s.h. *Paletz*

130. *Politics and the Media of Mass Communication.* 3 s.h. *Paletz*

137. *Political Behavior in Elections.* 3 s.h.

138. *Political Behavior in Policy Making.* 3 s.h. *Braithwaite*

139. *Science and Government.* 3 s.h. *Braithwaite*

141. *Public Administration.* 3 s.h. *Hall*

142. *Administrative Responsibility.* 3 s.h. *Hall*

143. *The Politics of Distribution.* 3 s.h. *Thomas*

146. *Legislation.* 3 s.h. *Simpson*

174. *Political Implications of Economic Legislation.* 3 s.h. *Simpson*

199. *The Changing South.*

207. *American Constitutional Law and Theory.* 3 s.h. *Rankin*

208. *American Constitutional Law and Current National Problems.* 3 s.h. *Rankin*

209. *Problems in State Government in the United States.* 3 s.h. *Rankin and Leach*

230. *American National Government.* 3 s.h. *Thomas*

241. *Public Administrative Organization and Management.* 3 s.h. *Hall*

243. *Administrative and Organizational Theory and Behavior.* 3 s.h. *Thomas*

244. *Administrative Law and Process.* 3 s.h. *Hall*

246. *Administration and Public Policy.* 3 s.h. *Thomas*

275. *The National Party System.* 3 s.h. *Kornberg*

285. *The Judicial Process.* Prerequisites: Political Science 127, 207 or their equivalents. Not open to students who have completed Political Science 128. 3 s.h.

291. *Problems of Urban Government.* 3 s.h. *Leach*

293. *Federalism.* 3 s.h. *Leach*

International Law and Relations

121. *Elements of International Relations.* 3 s.h. *Ball and Proctor*

122. *Modern International Politics.* 3 s.h. *Ball*

124. *The New States of Africa in World Affairs.* 3 s.h. *Proctor*
157. *U.S. Foreign Policy.* 3 s.h.
158. *Control of American Foreign Policy.* 3 s.h. *Ball*
220. *Problems in International Politics.* 3 s.h. *Kulski*
221. *International Public Organization.* 3 s.h. *Ball*
227. *International Law.* 3 s.h. *Grzybowski*

Independent Reading and Undergraduate Seminars

191, 192. *Independent Study.* Open only to qualified juniors by permission of the Director of Undergraduate Studies and of the individual instructor. 3-6 s.h. *Staff*

193, 194. *Independent Study.* Open only to qualified seniors by permission of the Director of Undergraduate Studies and of the individual instructor. 3-6 s.h. *Staff*

195, 196. *Junior Seminar in Political Science.* Prerequisites: Political Science 11 or 61 and the consent of the instructor. Open to non-majors as well as to majors. *Staff*

198. *Senior Honors Seminar.* Open only to senior political science majors who are candidates for the degree with distinction. Prerequisite: Political Science 197 and consent of the instructor. 3 s.h. *Staff*

Departmental Major

Prerequisite. Political Science 11 or 61.

Major Requirements. Twenty-one semester hours of work in the Department above courses 11 or 61, including at least six semester hours of 200 courses. Majors must take at least three semester hours in each of three fields.

Related Work. Eighteen hours in departments approved by the Political Science adviser, of which at least six hours must be taken in *each* of two departments and no more than six hours may be in courses primarily open to freshmen. Related work is usually taken in the departments of Economics, History, Philosophy, Psychology and Sociology and in Interdisciplinary Course 101, 102.

The Department offers work leading to graduation with distinction. See the section on Honors.

Portuguese

For courses in Portuguese, see *Romance Languages.*

Psychology

Professor Alexander, *Chairman*; Associate Professor Wing, *Director of Undergraduate Studies*; Professors Brehm, Carson, Dai, Diamond, Guttman, Jones, Wallach; Associate Professors Altrocchi, Borstelmann, R. Erickson, Lakin, Lockhead, McHugh, Schiffman; Research Associate Professor Gaffron; Assistant Professors Coie, Costanzo, C. Erickson, Kramer, Kremen, Linder, Staddon, Wortman; Lecturers Botwinick, Clifford, E. Crovitz, H. Crovitz, Eisdorfer, Feather, I. Gehman, Huse, Kinsbourne, Krugman, Obrist, Peele, Shows, Somjen, Thompson, Wolbarsht.

Psychology 91 or its equivalent is a prerequisite for all other courses in psychology. Six semester hours in psychology (including Psychology 91) or special permission of the course instructor or the Director of Undergraduate Studies are required for admission to all psychology courses over 140.

91. *Introductory Psychology.* 3 s.h. *Staff*

100. *Personality.* 3 s.h. *Alexander and Kremen*

101. *Introductory Social Psychology.* 3 s.h. *Jones and Linder*

104. *Comparative Psychology.* 3 s.h. *Staff*

110. *Applied Psychology.* 3 s.h. *McHugh*

111. *Advanced General Psychology.* 3 s.h. *Staff*

116. *Psychology of Personality.* 3 s.h. *E. Crovitz*

117. *Statistical Methods in Psychology.* 3 s.h. *Staff*

118. *Experimental Methods in Psychology.* 3 s.h. *Staff*

121. *Child Psychology.* 3 s.h. *Borstelmann and McHugh*

122. *Adjustment of the Preschool Child.* Prerequisite: Psychology 121 3 s.h. *Coie*

126. *Adolescent Psychology.* Prerequisite: Psychology 121 or Education 118, or permission of the instructor. 3 s.h. *McHugh*

130. *Principles and Methods of Psychological Evaluation.* Prerequisite Psychology 117. 3 s.h. *Wing*

132. *The Psychology of Individual Differences.* 3 s.h. *Wing*

141. *Personality and Behavior Disorder.* Prerequisite: Psychology 100 3 s.h. *Altrocchi, Carson, and Lakin*

142. *Instrumental Behavior.* 3 s.h. *Guttman and Staddon*

143. *Experimental Methods in Cognitive Psychology.* 3 s.h. *Wortman*

144. *The Psychology of Learning.* 3 s.h. *Staff*

145. *Experimental Approaches to Personality.* Prerequisite: Psychology 100 or permission of the instructor. 3 s.h. *Schiffman and Costanzo*

147. *Experimental Social Psychology.* Prerequisite: Psychology 101 or permission of the instructor. 3 s.h. *Jones and Linder*

148. *Psychology of Perception and Thinking.* 3 s.h. *H. Crovitz*

149. *Motivation.* 3 s.h. *C. Erickson*

151. *Psychology and International Relations.* Prerequisites: Psychology 91, 100 or 101, and consent of the instructor. *Lakin and Wortman*

152. *Physiological Psychology.* Prerequisites: Physics 1-2 or Chemistry 1-2 or permission of instructor. 3 s.h. (Formerly Psychology 112.) *R. Erickson*

153. *Introduction to Biological Psychology.* Prerequisite: Biology 1-2 and Comparative Anatomy, or permission of the instructor. (Formerly Psychology 108.) 3 s.h. *Diamond*

165. *Personality Theory.* Prerequisite: Psychology 100. 3 s.h. *Alexander and Kremen*

171, 172. *Junior Tutorial.* Prerequisites: 6 s.h. in psychology and permission of Director of Undergraduate Studies. 4 s.h. *Staff*

173, 174. *Senior Tutorial.* Prerequisite: 12 s.h. in psychology and permission of Director of Undergraduate Studies. 4 s.h. *Staff*

175, 176. *Independent Research.* Prerequisite: 9 s.h. of Psychology. 6-12 s.h. *Staff*

191, 192. *Independent Study and Research—I.* Open only to highly qualified students in the junior year, by permission of the department. 6 s.h. *Staff*

193, 194. *Independent Study and Research—II.* Open only to highly qualified students in the senior year, by permission of the department. 6-12 s.h. *Staff*

The following courses are open to selected undergraduates with permission of the instructor:

203. *Psychology of Perception.* 3 s.h. *Lockhead*

204. *Comparative Psychology.* 3 s.h. *C. Erickson*

210. *Cognition and Higher Mental Processes.* 3 s.h. *Wortman*

213, 214. *Conditioning and Learning.* 6 s.h. *Guttman and Staddon*

215. *Developmental Psychology.* Prerequisite: special permission of the instructor. 3 s.h. *Borstelmann*

216. *Biological Psychology.* 3 s.h. *Diamond*

217. *Research Methods in Social Psychology.* 3 s.h. *Linder*

218. *Social Psychology.* 3 s.h. *Jones*

220. *Neuroendocrinology and Behavior.* 3 s.h. *C. Erickson*

225. *Personality and Experimental Dynamics.* 3 s.h. *Staff*

234. *Seminar in Personality.* 3 s.h. *Wallach*

236. *Theoretical Psychology.* 3 s.h. *H. Crovitz*

237. *Functional Neurophysiology.* Permission of the instructor. 3 s.h. *R. Erickson*

238. *The Electronencephalogram and Psychological Function.* 3 s.h. *Obrist*

239. *Behavioral Correlates of Brain Damage in Man.* 3 s.h. *Thompson*

245, 246. *Personality Theory.* 6 s.h. *Alexander, Kremen, and Schiffman*

247, 248. *Personality Assessment.* 6 s.h. *Alexander and Kremen*

249. *Introduction to Exceptional Children.* 3 s.h.

251. *Personality and Person Perception.* Prerequisite: permission of instructor. 3 s.h. *Altrocchi*

253, 254. *Personality Development.* 3 s.h. *Eisdorfer and Borstelman*

273. *Principles of Psychological Measurement.* Prerequisite: Mathematics 232 or equivalent. 3 s.h. *Schiffman*

282. *Introduction to Methods in Psychotherapy.* 3 s.h. *Lakin and Carson*

292. *History of Psychology.* 3 s.h. *Diamond and Guttman*

Departmental Major

Prerequisite. Psychology 91 or equivalent.

Major Requirements. 24 semester hours in psychology, including Psychology 91, 117, and a minimum of two courses numbered above 140. Beginning with majors graduating in 1969, in place of the requirement of six hours of courses numbered above 140, students will be required to take at least one of the following courses: 122, 130, 142, 144, 145, 147, 148, 152.

Related Work. 18 semester hours which may include certain courses in chemistry, economics, education, English, linguistics, mathematics, philosophy, physics, political science, sociology-anthropology and zoology for the A.B. degree. For the B.S. degree, all 18 s.h. must be in the natural sciences.

Religion

Professor Langford, *Chairman*; Professor Phillips, *Director of Undergraduate Studies*; Assistant Professor Partin, *Supervisor of Freshman Instruction*; Professors Poteat and Price; Associate Professors Bradley, Clark, Jones, McCollough, Osborn, Sullivan and Wintermute; Assistant Professors Isenberg, Jenks, Kort, Pearson, Ricketts; Lecturer Shows

The purpose of the undergraduate program of instruction in religion is to engage the student in a study of religion, its nature and historical manifestations. Since the Judaeo-Christian tradition is the dominant religious influence in the history of Western culture, a historical-critical examination of its primary sources, Old and New Testaments, is the basis of the required study in religion.

The department sees its task as integral to that of a liberal education. The inclusion of the study of religion in the university recognizes the integrity of the subject matter and its essential relation to the other humanities. It serves the cause of humanistic education furthermore by keeping alive fundamental and ultimate questions which are inherent in its subject matter and which can be engaged responsibly in the academic study of religion.

Students who have fulfilled the uniform course requirement in religion may take only courses numbered 100 and above.

1-2. *The English Bible.* 6 s.h. *Staff*

43, 44. *Tutorial.* 1 s.h. each semester. *Staff*

51-52. *The English Bible.* Not open to freshmen, or to students who have received credit for Religion 1-2. 6 s.h. *Staff*

55. *The Religion of the Bible.* Religion 55 must be followed by one of the following: Religion 65, 85, or 93. Not open to freshmen, or to students who have received credit for Religion 1-2 or 51-52. 3 s.h. *Staff*

65. *Jesus:The Man and His Message.* Prerequisite: Religion 55. Not open to students who have completed the uniform course requirements in religion. See Religion 121. 3 s.h. *Staff*

85. *Introduction to Christian Ethics.* Prerequisite: Religion 55. Not open to students who have completed the uniform course requirements in religion. See Religion 152. 3 s.h. *Clark and McCollough*

93. *Survey of the World's Living Religions.* Prerequisite: Religion 55. Not open to students who have completed the uniform course requirements in religion. See Religion 175. 3 s.h. *Bradley, Partin, and Sullivan*

100. *Principles of Investigation.* Required of all majors; open to others. 3 s.h. *Wintermute*

105. *The Region of the Bible.* This course must be followed by one of the following: Religion 111, 121, 123, 152 or 175. 3 s.h. *Staff*

111. *The Prophets of the Old Testament.* 3 s.h. *Murphy and Wintermute*

121. *The Mission and Message of Jesus.* Not open to students who have received credit for Religion 65. 3 s.h. *Pearson and Price*

123. *The Life and Letters of Paul.* 3 s.h. *Isenberg, Pearson, and Price*

125. *Varieties of Early Judaism.* 3 s.h. *Isenberg*

131, 132. *History of the Christian Church Through the Reformation.* 3 s.h. each semester. *Fousek*

133. *History of Christianity Since the Reformation.* 3 s.h. *Fousek*

135. *The Correspondence of the Great Fathers of the Church.* Prerequisite: Religion 131, or permission of instructor. 3 s.h. *Fousek*

137. *Christianity in America.* 3 s.h. *Jones*

138. *Contemporary Religions in the United States.* 3 s.h. *Phillips*

140. *Christian Beliefs.* 3 s.h. *Langford*

144. *Problems of Religious Thought.* 3 s.h. *Langford*

146. *Contemporary Jewish Thought.* 3 s.h. *Isenberg*

149. *Current Interpretations of Christianity.* 3 s.h. *Osborn*

152. *Christian Ethics.* Not open to students who have received credit for Religion 85. 3 s.h. *Clark and McCollough*

154. *Ethics and Modern Technology.* 3 s.h. *Clark*

156. *Christian Marriage and the Family.* 3 s.h. *Phillips*

171. *Religions of the Ancient Near East.* 3 s.h. *Wintermute*

172. *Religious Quests of the Greco-Roman World.* 3 s.h. *Pearson and Wintermute*

174. *Religion Among Preliterate Peoples.* 3 s.h. *Ricketts*

175. *Non-Christian Religions of the Modern World.* Not open to students who have received credit for Religion 93. 3 s.h. *Bradley, Partin, Ricketts, and Sullivan*

176. *World Religions and Social Change.* 3 s.h. *Bradley*

178. *Myth and Symbol.* 3 s.h. *Partin*

179. *Mysticism: Sacred and Profane.* Prerequisite: Religion 93 or 175. 3 s.h. *Sullivan*

180. *Psychology and Religion.* 3 s.h. *Shows*

187. *Religious Values in Classical and European Literature.* 3 s.h. *Kort*

188. *Recent Literature and Its Religious Implications.* 3 s.h. *Kort*

189. *Man in Modern Prophetic Thought.* 3 s.h. *McCollough*

191, 192. *Independent Study.* 6 s.h.

193, 194. *Independent Study.* 6-12 s.h.

195-196. *Honors Research.* 6 s.h. *Staff*

Senior Seminars

The following seminars parallel the five categories of courses offered in the department. They afford opportunities for more intensive reading and individual research. To be eligible for a seminar the student (major or non-major) must have completed at least one course in this area or pass the qualifying examination on the departmental reading list in that category. Each seminar will be offered as frequently as student demand and available personnel permit.

199. *(See University Course.)*

203. *Biblical Studies.* 3 s.h.

204. *Church History.* 3 s.h.

205. *Theology and Ethics.* 3 s.h.

206. *Christianity and Culture.* 3 s.h.

207. *History of Religions.* 3 s.h.

For Seniors and Graduates

210. *Contemporary British Theology.* Prerequisite: permission of the instructor. 3 s.h. *Langford*

228. *The Theology of the Gospel and the Epistles of John.* Prerequisite: permission of the instructor. 3 s.h. *Price*

248. *The Theology of Karl Barth.* Prerequisite: permission of the instructor. 3 s.h. *Osborn*

279. *Religions of East Asia.* Prerequisite: permission of the instructor. 3 s.h. *Sullivan*

285. *Origins of Indian Civilization.* Prerequisite: permission of the instructor. 3 s.h. *Sullivan*

293. *Sociological Analysis of Religion.* 3 s.h. *Clark*

294. *Institutional Analysis of Religious Bodies.* 3 s.h. *Clark*

Departmental Major

Prerequisite. Completion of the uniform course requirement in religion. The sequence Religion 1-2 or 51-52 is recommended.)

Major Requirements. Twenty-five semester hours selected as follows:

1. Religion 100 (to be taken in the semester after becoming a major).
2. Three hours from each of the following categories: (A major may fulfil, without credit, the requirement in any one of these areas by passing the departmental examination of the basic book list for that category).
   (a) Biblical studies: 111, 121, 123, 228
   (b) Church history: 131, 132, 133, 137, 138
   (c) Theology and ethics: 140, 149, 152, 154, 156, 210, 248
   (d) Christianity and culture: 144, 187, 188, 189
   (e) History of religions: 171, 172, 175, 176, 178, 179, 279, 285
3. Three hours in one course numbered above 200.
4. At least six hours elected from the departmental curriculum.

Related Work. Eighteen semester hours, including a minimum of six hours in each of two departments. There is no restriction in principle as to departments in which related work may be taken. The departmental major adviser will take into consideration the vocational objective of the student and the need to select courses which will strengthen his major work.

The Department offers work leading to graduation with distinction which is normally begun in the junior year. See the section on graduation with distinction in this *Bulletin*.

Romance Languages

Professor Fein, *Chairman*; Professor Grant, *Director of Undergraduate Studies in French*; Professor Davis, *Director of Undergraduate Studies in Spanish*; Associate Professor Hull, *Supervisor of Language Instruction*; Professors Cherpack, Dow, Fowlie, Predmore, Tétel, and Wardropper; Associate Professors Cordle, Torre, and Vincent; Assistant Professors Barlow, Bryan, Cox, Dow, Hogsett, Jackson, Miller, Périvier, Ripley, Salchenberger, Tate, and Thiher; Instructors Cypress and Murray; Bowman, Frasure, Humphrey, Jones, Keane, LeGoff, Maddox, Murray, Park, Poignant

French 63-64 and Spanish 63-64 are the prerequisites for all elective courses. Students who, by reason of foreign residence, have had special opportunities in French or Spanish must be classified by the Director of Undergraduate Studies.

French

1-2. *Elementary French.* 8 s.h. *Hull and Staff*

63-64. *Intermediate French.* Prerequisite: French 1-2 or placement test. 8 s.h. *Vincent and Staff*

91, 92. *Introduction to French Literature.* Prerequisite: French 63-64 or equivalent. 6 s.h. *Cordle and Staff*

97. *Spoken French.* Prerequisite: French 64. 3 s.h. *Dow and Staff*

100. *Masterworks of French Literature.* Open only to freshmen, through the Advanced Placement Program or by invitation of the department. 3 s.h. *Hogsett*

104. *The Sixteenth Century.* 3 s.h. *Vincent and Tétel*

105. *Explication De Textes.* For students who have taken 91 and 92. 3 s.h. *Fowlie and Thiher*

108. *French Romanticism.* 3 s.h. *Grant and Ripley*

109. *Toward Modernism in French Poetry.* 3 s.h. *Barlow*

111. *French Drama of the Nineteenth Century.* 3 s.h. *Dow*

112. *French Drama of the Twentieth Century.* 3 s.h. *Dow*

114. *Diderot.* 3 s.h. *Hogsett*

115. *The Nineteenth-Century Novel.* Not open to students taking French 221 or 222. 3 s.h. *Grant*

117. *Masterpieces of French Medieval Literature.* 3 s.h. *Ripley*

119. *French Drama of the Seventeenth Century.* 3 s.h. *Périvier*

120. *Seventeenth-Century Poetry, Novel and Rhetoric.* 3 s.h. *Périvier*

121. *The French Enlightenment.* 3 s.h. *Tate*

122. *The Novel in the Eighteenth Century.* 3 s.h. *Hogsett*

127. *Advanced Composition and Conversation.* Prerequisite: 97 or consent of the instructor. 3 s.h. *Mrs. Bryan, Mrs. Dow*

133, 134. *Contemporary French Life and Thought.* 6 s.h. *Cordle*

191, 192. *Independent Study.* Open only to highly qualified juniors by permission of the Department. 6 s.h.

193, 194. *Independent Study.* Open only to highly qualified seniors by permission of the Department. 6 s.h.

209. *Advanced Composition and Syntax.* 3 s.h. *Hull*

210. *French Phonetics.* 3 s.h. *Hull*

213. *French Literature of the Seventeenth Century.* 3 s.h. *Cherpack*

214. *French Literature of the Seventeenth Century.* 3 s.h. *Cherpack*

217. *Mallarmé and Rimbaud.* 3 s.h. *Fowlie*

219. *Old French Literature.* 3 s.h. *Vincent*

221. *The Nineteenth-Century French Novel.* 3 s.h. *Grant*

222. *The Nineteenth-Century French Novel.* 3 s.h. *Grant*

223. *French Literary Criticism.* 3 s.h. *Fowlie*

224. *History of the French Language.* 3 s.h. *Hull*

225, 226. *From Renaissance to Baroque in French Literature of the Sixteenth Century.* 6 s.h. *Tétel*

228. *French Poetry of the Twentieth Century.* 3 s.h. *Fowlie*
233. *Contemporary French Theatre.* 3 s.h. *Fowlie*
234. *Proust.* 3 s.h. *Fowlie*
236. *Baudelaire.* 3 s.h. *Fowlie*
241, 242. *French Literature and Thought in the Age of Enlightenment.* 6 s.h. *Cherpack*
245. *French Literature of the Twentieth Century.* 3 s.h. *Cordle*
246. *French Literature of the Twentieth Century.* 3 s.h. *Cordle*

Italian

1-2. *Elementary Italian.* 8 s.h. *Salchenberger*
63-64. *Intermediate Italian.* Prerequisite: Italian 1, 2 or placement test. 3 s.h. *Salchenberger*
101, 102. *Masterworks of Italian Literature in English Translation.* 6 s.h. *Salchenberger*
181-182. *Italian.* 6 s.h. *Tétel and Salchenberger*
183, 184. *Readings in Italian Literature.* Prerequisite: Italian 63-64, or 181-182. 6 s.h. *Salchenberger*
288. *The Renaissance.* 3 s.h. *Tétel*

Portuguese

181-182. *Portuguese.* 6 s.h. *Miller*
185, 186. *Conversation.* Prerequisite: Portuguese 181-182 or permission of the instructor. 1 s.h. *Miller*

Spanish

1-2. *Elementary Spanish.* 8 s.h. *Miller and Staff*
63-64. *Intermediate Spanish.* Prerequisite: Spanish 1-2 or placement test. 8 s.h. *Cox and Staff*
91,92. *Introduction to Spanish Literature.* Prerequisite: Spain 63-64 or equivalent. 6 s.h. *Staff*
97. *Spoken Spanish.* Prerequisite: Spanish 64. 3 s.h. *Staff*
156. *Representative Writers of Spanish-American Literature.* 3 s.h. *Fein*
161. *Spanish Literature of the Renaissance and the Baroque.* 3 s.h. *Miller and Cox*
162. *Spanish Romanticism.* 3 s.h. *Torre*
164. *Topics of Spanish Civilization.* 3 s.h. *Jackson*
165. *Analysis of Great Spanish Authors.* 3 s.h. *Wardropper*
166. *Spanish Realism.* 3 s.h. *Davis*
167. *Golden Age Literature: Cervantes.* 3 s.h. *Predmore*
176. *Advanced Conversation.* Prerequisite: Spanish 97 or permission

of the instructor. 3 s.h. *Torre*

191,192. *Independent Study.* Open only to highly qualified juniors by permission of the Department. (See Section on Eligibility for Special Curricular Programs.) 6 s.h.

193, 194. *Independent Study.* Open only to highly qualified seniors by permission of the Department. (See Selection on Eligibility for Special Curricular Programs.) 6 s.h.

251. *The Origins of the Spanish Novel.* 3 s.h. *Wardropper*

252. *Spanish Lyric Poetry Before 1700.* 3 s.h. *Wardropper*

253. *The Origins of the Spanish Theater.* 3 s.h. *Wardropper*

255. *Modern Latin-American Literature.* 3 s.h. *Fein*

256. *Contemporary Latin-American Literature.* 3 s.h. *Fein*

257. *Old Spanish Language.* 3 s.h. *Davis*

258. *Old Spanish Literature.* 3 s.h. *Davis*

259. *Spanish Phonetics.* Prerequisite: Spanish 176 or permission. 3 s.h. *Predmore*

260. *Advanced Composition and Syntax.* Prerequisites: Spanish 176 or permission. 3 s.h. *Davis*

261. *Nineteenth-Century Novel.* 3 s.h. *Davis*

265. *Golden Age Literature: Cervantes.* 3 s.h. *Predmore and Wardropper*

266. *Golden Age Literature: The Drama.* 3 s.h. *Wardropper*

275. *Contemporary Spanish Literature: Essay and Lyric Poetry.* 3 s.h. *Predmore*

276. *Contemporary Spanish Literature: Novel.* 3 s.h. *Predmore*

Romance Languages

218. *The Teaching of Romance Languages.* 3 s.h. *Dow*

Departmental Major

Prerequisites. French or Spanish: 63-64 or equivalent.

Major Requirements. For French: 97; 127; 209 or 210; and a minimum of 15 hours of courses in literature selected from 91 and above. All majors must take at least one course in any three of the six main historical periods (Medieval, Renaissance, seventeenth, eighteenth, nineteenth, and twentieth centuries). French 91-92 does not meet any of this requirement. For Spanish: 97, 176, 259 or 260; and a minimum of 15 hours of courses in literature selected from 91 and above including six hours above 200. All majors must take one of the following: 161, 167, 251, 252, 253, 265, 266.

The Department offers work in the junior and senior years leading to graduation with distinction. See the section on Honors in this *Bulletin.*

Related Work. Majors in Romance Languages will select, with approval of the Director of Undergraduate Studies, appropriate courses from the following fields: (1) other languages and literature; (2) history; (3) philosophy; (4) appreciation courses in music and art; (5) linguistics; and occasionally from other fields deemed suitable.

Russian

For courses in Russian, see *Slavic Languages and Literatures.*

Slavic Languages and Literature

Associate Professor M. J. Krynski, *Chairman*; Associate Professors B. Jezierski and M. Apte; Assistant Professors M. Pavlov, H. Pavlov, *Director of Undergraduate Studies and Superviser of Language Instruction*, H. Ullrich and Staff

1-2. *Elementary Russian.* 8 s.h. *Staff*

63-64. *Intermediate Russian.* Prerequisite: Russian 1-2, or two years of high school Russian. 8 s.h. *Staff*

91. *Introduction to Russian Literature of the Nineteenth Century.* Prerequisite Russian 63-64 or equivalent. 3 s.h. *M. Pavlov*

92. *Introduction to Russian Literature of the Twentieth Century.* Prequisite Russian 91. 3 s.h. *M. Pavlov*

101, 102. *Russian Literature and Culture Through the Nineteenth Century.* 6 s.h. *Jezierski*

105. *The Russian Theatre and Drama.* 3 s.h. *Jezierski*

179. *Twentieth-Century Russian Prose.* Prerequisite: Russian 1, 2, 63, 64, or permission of instructor. 3 s.h. *Krynski*

180. *Masterpieces of Russian Literature of the Nineteenth Century.* Prerequisite: permission of instructor. 3 s.h. *Krynski*

181. *Modern Russian Poetry.* Prerequisite: at least three semesters of Russian, or permission of instructor. 3 s.h. *Jezierski*

191, 192. *Independent Study.* Open only to highly qualified students by permission of the department. (See section on Eligibility for Special Programs.) 6 s.h.

201, 202. *The Novelists of Nineteenth-Century Russia.* 6 s.h. *Krynski*

207. *Soviet Literature and Culture.* 3 s.h. *Jezierski*

212. *Pushkin.* Prerequisite: Russian 101, or the instructor's permission. Readings in English or Russian. 3 s.h. *Jezierski*

215, 216. *Advanced Composition and Syntax.* Prerequisite: Russian 91, 92 or permission of instructor. 6 s.h. *M. Pavlov*

224. **The Russian Short Story—Eighteenth Century to the Present.* 3 s.h. *Jezierski*

225. *Leo Tolstoy.* 3 s.h. *Jezierski*
227. **Gogol.* 3 s.h. *Jezierski*
230. *Chekhov.* 3 s.h. *Krynski*
232. **Fyodor Dostoevsky.* 3 s.h. *Krynski*
233. *Ivan Turgenev.* 3 s.h. *Krynski*
204. *Polish Literature of the Twentieth Century.* 3 s.h. *Krynski*
205. *The Structure of Polish in Relation to Russian.* 3 s.h. *Krynski*
206. **Readings in Contemporary Polish Prose in the Original.* 3 s.h. *Krynski*
236. **Russian and Polish Romanticism.* 3 s.h. *Krynski*

Departmental Major

Prerequisite. Russian 1-2 and 63-64, or equivalent.

Major Requirement. A minimum of eight courses in the department. All majors must take the following four obligatory courses: 91, 92, 215, 216, plus courses in literature, two of which must be selected from the 200 courses.

Students contemplating graduate work in the Slavic field may elect a more intensive program consisting of ten courses. A knowledge in depth of Russian literature, or some knowledge of Polish language and/or literature, will facilitate admission to graduate school and subsequent study in the field.

Sociology and Anthropology

Professor Tiryakian, *Chairman*; Professor Roy, *Director of Undergraduate Studies, Sociology*; Assistant Professor Crocker, *Director of Undergraduate Studies, Anthropology*; Professors Back, Kerckhoff, La Barre, Maddox, McKinney, Myers, Smith and Thompson; Associate Professors Apte, R. Fox, Palmore, Preiss; Assistant Professors Bowers, J. Fox, Hartford, Prost, Ullrich and Wilson

Sociology

Sociology 91, or special permission of the instructor or the Director of Undergraduate Studies, is a prerequisite for all sociology courses at the 200 level.

91. *Introduction to Sociology: Concepts and Procedures.* 3 s.h. *Staff*
132. *Introduction to Sociological Research.* 3 s.h. *Staff*
136. *Sociology of Modern Africa.* 3 s.h. *Tiryakian*
139. *Comparative Social Structure.* 3 s.h. *Wilson*
141. *Introduction to Population and Human Ecology.* 3 s.h. *Hartford and Myers*

142. *The Sociology of Mass Communication.* 3 s.h. *Smith*
143. *Deviant Social Behavior.* 3 s.h. *Preiss*
144. *Political Sociology.* 3 s.h. *Preiss*
145. *Urban Sociology.* 3 s.h. *Smith*
146. *Industry and Society.* 3 s.h. *Roy*
150. *The Family.* 3 s.h. *Kerckhoff and Roy*
151. *Sociology of Religion.* 3 s.h. *Tiryakian and Wilson*
153. *Sociology of the South.* 3 s.h. *Thompson*
154. *The Sociology of the Arts.* 3 s.h. *Back*
155. *Introduction to Industrial Sociology.* 3 s.h. *Roy*
159. *The Negro in America.* 3 s.h. *Thompson and Palmore*
172. *Collective Behavior and Social Movements.* 3 s.h. *Kerckhoff*
193, 194. *Independent Study.* Open to qualified students in the junior and senior years by permission. 3 s.h. *Staff*
199. *The Changing South.* (See Interdisciplinary Course 199.)
241. *Social Stratification.* 3 s.h. *Roy*
242. *The Sociology of Occupations and Professions.* 3 s.h. *McKinney and Roy*
243. *Population Dynamics and Social Change.* 3 s.h. *Hartford and Myers*
247. *Community and Society.* 3 s.h. *Thompson*
251. *The Sociology of Modernization.* 3 s.h. *Tiryakian*
253. *Social Institutions.* 3 s.h. *Thompson*
255. *Race and Culture.* 3 s.h. *Thompson*
259. *Religion and Social Change.* Prerequisite: either Anthropology 264, Sociology 151, or the equivalent. 3 s.h. *Tiryakian and Wilson*
272. *The Socialization Process.* 3 s.h. *Kerckhoff*
275. *Social Attitudes and Individual Behavior.* 3 s.h. *Back and Kerckhoff*
278. *Social Structure and the Life Cycle.* 3 s.h. *Maddox*
282. *Principles of Sociological Analysis.* 3 s.h. *McKinney and Wilson*
295. *Methodology in Sociology.* 3 s.h. *Smith and Back*
297. *Statistical Analysis in Sociology.* Prerequisite: Mathematics 233 or an equivalent course or permission of the instructor. 3 s.h. *Hartford*

Departmental Major in Sociology

Major Requirements. Twenty-four semester hours of Sociology including Sociology 91 and at least six semester hours in the senior-graduate courses.

Related Work. A minimum of eighteen semester hours, at least twelve of which are normally chosen from two of the following fields: economics, education, history, mathematics, political science, and psychology. Additional courses in other fields may also be elected as related work when indicated by the educational requirements of the student and approved by the departmental adviser.

Anthropology

93. *General Anthropology.* 3 s.h. *Staff*
94. *Cultural Anthropology.* 3 s.h. *Staff*
101, 102. *Introduction to the Civilizations of Southern Asia.*
121, 122. *World Ethnography.* 3 s.h. *Staff*
124. *Peoples of the World: American Indian.* 3 s.h. *La Barre*
126. *Peoples of the World: Oceania.* 3 s.h. *Bowers*
128. *Peoples of the World: Asia.* 3 s.h. *Staff*
130. *Cultural Change and Stability.* 3 s.h. *Staff*
134. *Political Anthropology.* 3 s.h. *Crocker and J. Fox*
137. *Comparative Social Organization.* Prerequisite: Anthropology 94 or permission of the instructor. 3 s.h. *J. Fox*
138. *The Analysis of Mythology and Ideology.* 3 s.h. *Crocker*
160. *The Anthropology of Agriculture.* 3 s.h. *Bowers*
193. *Independent Study.* 3 s.h. *Staff*
199. *The Changing South.*
220. *Society and Culture in India.* 3 s.h. *R. Fox*
222. *Topics in African Anthropology.* 3 s.h. *Staff*
231. *Physical Anthropology.* 3 s.h. *Buettner-Janusch*
232. *Human Genetics.* 3 s.h. *Buettner-Janusch*
238. *Language and Society.* 3 s.h. *Apte*
240. *Indo-Aryan Linguistics.* Prerequisite: Linguistics 101 or permission of instructor. 3 s.h. *Apte*
249. *Economic Anthropology.* 3 s.h. *Crocker and R. Fox*
260. *Linguistic Anthropology: Phonemics.* Prerequisite: permission of the instructor. 3 s.h. *Apte*
261. *Linguistic Anthropology: Morphology and Syntax.* Prerequisite: Anthropology 260 or permission of the instructor. 3 s.h. *Apte*
262. *Anthropology of Law.* 3 s.h. *Crocker*
263. *Primitive Art and Music.* 3 s.h. *La Barre*
264. *Primitive Religion.* 3 s.h. *La Barre, Crocker, and J. Fox*
265. *Personality and Society.* 3 s.h. *La Barre*
266. *Personality and Culture.* 3 s.h. *La Barre*
276. *Analysis of Kinship Systems.* 3 s.h. *Crocker and J. Fox*
280, 281. *Seminar in Selected Topics.* Permission of the instructor. 6 s.h. *Staff*
291, 292. *Anthropological Theory.* 6 s.h. *Crocker and R. Fox*

Departmental Major in Anthropology

Major Requirements. Twenty-four semester hours of work in Anthropology including Anthropology 93-94 and at least six semester hours in the Senior-Graduate courses.

Related Work. A minimum of eighteen semester hours, at least twelve

of which are normally chosen from two of the following fields: anatomy, art, botany, economics, history, mathematics, political science, psychology, and zoology. Additional courses in other fields may be elected as related work when indicated by the educational requirements of the student and approved by the departmental adviser.

Spanish

For courses in Spanish, see *Romance Languages.*

University Courses

Fall Semester

199.1. *Comparative Politics: Western Europe. Cole*

199.4. *Social Impact and Response in the Developing World.* 3 s.h. *Himes*

199.5. *Science, Society, and Education. Kramer*

199.6. *Canada: Unknown Neighbor in Crisis. Preston*

Zoology

Professor Horn, *Chairman*; Assistant Professor Doyle, *Director of Undergraduate Studies*; Associate Professor Wainwright, *Superivisor of Freshman Instruction*; Professors Bookhout, Buettner-Janusch, Costlow, Fluke, Gregg, Klopfer, Livingstone, Schmidt-Nielsen, Vernberg, and Wilbur; Adjunct Professor Stefánsson; Associate Professors Gillham, Hunter, Nicklas, Tucker, and Ward; Assistant Professors Doyle and Vogel; Instructors Aulie, Covalt-Dunning, Hill, and Potter

11-12. *An Introduction to Living Systems.* (See Biology.)

53. *Comparative Vertebrate Anatomy.* Prerequisite: a year of college biology. 4 s.h. *Horn*

71. *Heredity and Society.* Prerequisite: A year of biology or consent of the instructor. A student may not receive credit for both Zoology 71 and 180. 3 s.h. *Ward*

92. *General Embryology.* Prerequisite: a year of college biology. Recommended: Zoology 53. 4 s.h. *Gregg*

103. *Principles of Ecology.* Prerequisites: a year of college biology, Mathematics 17 or 21. 4 s.h. *Livingstone*

109. *Evolution.* Prerequisite: Genetics or consent of the instructor. (Combined course with Botany 240.) 3 s.h. *Klopfer and Stone (Botany)*

120. *Ornithology.* Prerequisite: one year of biology. Zoology 53 recommended. 4 s.h. *Bailey*

131. *Human Evolution.* Prerequisites: a year of biology and a course in genetics. (Combined course in Anthropology 231.) 3 s.h. *Buettner-Janusch*

151. *Principles of Physiology.* Prerequisites: at least a year of zoology and a year of chemistry. 4 s.h. *Tucker*

174. *Animal Diversity.* Prerequisite: a year of college biology. 4 s.h. *Wainwright*

180. *Principles of Genetics.* Prerequisites: introductory course in biology, chemistry and mathematics, or equivalent. (Also listed as Botany 180, Botany 280, and Zoology 280.) 3 s.h. *Boynton, Gillham* and others of the University Program in Genetics

182. *Principles of Genetics Laboratory.* May only be taken with Zoology 180 or by consent of instructor. (Also listed as Botany 182.) 1 s.h. *Boynton and Gillham*

196. *Seminar.* 2 s.h. *Tucker and Staff*

197, 198. *Special Problems.* Permission must be obtained from the Director of Undergraduate Studies and the instructor under whom the student wishes to work. Not more than 4 s.h. may be counted toward major work. *Staff*

For Seniors and Graduates

201. *Animal Behavior.* Prerequisites: physiology, genetics and evolution, or consent of instructor. 3 s.h.; 4 s.h. with laboratory. *Klopfer*

203. *Marine Ecology.* 6 s.h. (Given at Beaufort.) *Staff*

205. *Elements of Theoretical Biology.* Prerequisites: one year each of college biology and mathematics, or consent of instructor. 3 s.h. *Gregg*

213. *Ecological Oceanography.* Prerequisites: courses in ecology or invertebrate zoology, chemistry, and calculus; differential equations strongly recommended. 3 s.h. *Doyle*

214. *Biological Oceanography.* Prerequisites: a course in invertebrate zoology, ecology, marine biology or an appropriate equivalent; chemistry through organic; one year of physics and mathematics. 3 s.h.; 4 s.h. with laboratory. *Staff*

216. *Limnology.* Prerequisites: one year each of biology, chemistry and physics, and Mathematics 21; or permission of instructor. 4 s.h. *Livingstone*

224. *Vertebrate Zoology.* Prerequisite: Zoology 53. 4 s.h. *Bailey*

228. *Experimental Embryology.* 4 s.h. *Gregg*

232. *Human Genetics.* Prerequisites: Zoology 131 or permission of the instructor. 3 s.h. *Buettner-Janusch*

238. *Systematic Zoology.* Prerequisites: Biology 1-2. 4 s.h. *Bailey*

240. *Chemical Oceanography.* 6 s.h. (Given at Beaufort.) *Stefansson*

243. *Cytology.* Prerequisite: one year of biology. (Combined course with Botany 243.) 4 s.h. *Anderson (Botany) and Nicklas*

244. *Topics in Cell Structure and Function.* Prerequisite: Zoology 243

(Botany 243) or equivalent and permission of the instructor. 2 s.h. *Nicklas and Moses (Anatomy)*

245. *Radiation Biology.* Prerequisites: College physics, mathematics and organic chemistry. 3 s.h. or 4 s.h. with laboratory. *Fluke*

246. *Physical Biology.* Prerequisites: Mathematics 22, Chemistry 151, Physics 41, and one and one-half years of college biology or consent of the instructors. 3 s.h. or 4 s.h. with optional laboratory. *Fluke and Wainwright*

247. *Biological Nucleonics.* Prerequisites: consent of instructor and one year each of college biology, chemistry and physics. 3 s.h. *Fluke and Woods (Forestry)*

248. *Introductory Biochemistry.* Prerequisites: Chemistry 151, one year of college physics (second semester may be concurrent), Mathematics 22, or consent of the instructors. 3 s.h. *Biochemistry Staff*

250. *Physiological Ecology of Marine Animals.* Prerequisite: A course in Physiology. 6 s.h. (Given at Beaufort only.) *Vernberg*

252. *Comparative Physiology.* Prerequisite: Zoology 151 or equivalent. 4 s.h. *K. Schmidt-Nielsen*

271. *Celluar Physiology.* Prerequisites: two years of biology and at least one year of chemistry. 4 s.h. *Wilbur and Staff*

274. *Invertebrate Zoology.* 6 s.h. (Given at Beaufort.)

278. *Invertebrate Embryology.* Prerequisite: Zoology 92. 4 s.h. *Bookhout*

280. *Principles of Genetics.* Prerequisites: Introductory courses in biology, chemistry and mathematics, or equivalent. (Also listed as Botany 180, Botany 280 and Zoology 180) 3 s.h. *Boynton, Gillham,* and others of the University Program in Genetics

Marine Laboratory. The following courses are given at Duke University Marine Laboratory, Beaufort, N. C.: 203, Marine Ecology; 214, Biological Oceanography; 240, Chemical Oceanography; 250, Physiological Ecology of Marine Animals; 274, Marine Invertebrate Zoology. Consult the *Bulletin* of the Duke University Marine Laboratory.

Departmental Major

Prerequisites. Biology 1-2.

Major Requirements (for both A.B. and B.S. degrees). A minimum of 24 s.h. of zoology. At least one course in each of the following three areas is urged: morphology (53, 92, 274, or 278), physiology (151, 252 or 271), and genetics (71 or 110).

With the prior approval of the Director of Undergraduate Studies, up to 6 s.h. of advanced work in the natural and formal sciences, other than zoology, may be counted toward the 24 s.h. of the zoology major.

Related Work. For the A.B. degree: at least one year of chemistry with additional work usually chosen from courses in botany, chemistry,

geology, mathematics, or physics. The language requirement will preferably be met by French, German, or Russian. For the B.S. degree: Chemistry 151 and 152 with additional work chosen from courses in botany, geology, mathematics or physics. Language requirements may be met by two languages, chosen from German, French, or Russian.

For interdisciplinary programs involving biology see page 11 of this *Bulletin*.

The Department offers work leading to graduation with distinction. See the section on Honors.

School of Engineering

The courses offered in the School of Engineering are listed below.

Each of the Engineering departments offers work leading to graduation with distinction. Consult the section on Honors.

*Course marked with an asterisk are offered only upon sufficient demand; enrollment is limited.

Engineering Non-Departmental Undergraduate Courses

Egr 1. *Engineering Design I.* 2 s.h. *Lewis, Linderoth, Sheppard, and Warner*

Egr 2. *Engineering Design II.* Prerequisites: Egr 1 and Math 51. 2 s.h. *Lewis and Linderoth*

Egr 23. *Statics.* Corequisite: Math 22. 3 s.h. *Arges, Dvorak, Nash, Palmer, and J. Wilson*

Egr 53. *Engineering Design III.* Prerequisite: Math 22. 2 s.h. *Buzzard, Macduff, and Wright*

Egr 63. *Introductory Electric Systems I.* Corequisites: Math 63 and Physics 41. 4 s.h. *Meier, Thurstone, and Wells*

Egr 73. *Mechanics of Deformable Bodies.* Prerequisite: Egr 23. 3 s.h. *Arges and Palmer*

Egr 83. *Structure and Properties of Solids.* Prerequisite: Chem 2. Corequisites: Egr 73 and Math 63. 3 s.h. *Pearsall and Shepard*

Egr 101. *Thermodynamics.* Prerequisites: Chem 2 and Physics 42. 3 s.h. *Elsevier, Harman, Kenyon, and Sheppard*

Egr 113. *Introductory Electric Systems II.* 3 s.h. *Pilkington and Wells*

Egr 123. *Dynamics.* Prerequisites: Egr 23, Math 63, and Physics 41. 3 s.h. *Nash, Palmer, J. Wilson, and Wright*

Egr 133. *Heat Transfer.* Prerequisite: Math 63. Corequisite: Egr 101. 2 s.h. *Chaddock and Werner*

Egr 143. *Fluid Mechanics.* Prerequisite: Math 63. Corequisite: Egr 123. 2 s.h. *Muga*

Egr 163. *Fields.* Prerequisite: Math 111. Corequisite: Egr 113, 123, 133, and 143. 3 s.h. *George and Thurstone*

Egr 169.* *Legal Aspects of Engineering.* Open to seniors only. 3 s.h. *Olive*

Egr 170.* *Patent Law for Engineers.* Open to seniors only. 3 s.h. *Olive*

Civil Engineering

Professor Vesić, *Chairman*; Professor Bryan, *Director of Undergraduate Studies;* Professor Brown; Associate Professors Hill, and Palmer; Assistant Professors Arges, Dvorak, Muga, and Wilson; Visiting Professor Lash; Visiting Associate Professor Kumar; Part-time Instructor Sheppard

CE 96. *Geodetic and Location Measurements.* Prerequisite: Egr 53. 3 s.h. *Sheppard*

CE 110.* *Plane Surveying.* Prerequisites: Egr 1 and Math 21. 3 s.h. *Sheppard*

CE 116. *Transportation Engineering.* Concurrent: CE 96. 3 s.h.

CE 118. *Materials of Construction.* Prerequisites: Egr 73 and 83. 2 s.h. *Arges*

CE 121.* *Hydrology.* Prerequisite: CE 123. 3 s.h. *Bryan*

CE 123. *Hydraulic Engineering.* Prerequisite: Egr 143. 3 s.h. *Muga*

CE 124. *Sanitary Engineering.* Prerequisite: CE 123 or consent of instructor for non-civil-engineering students. 3 s.h. *Bryan*

CE 126.* *Sanitary Engineering Design.* Prerequisite: CE 124. 3 s.h. *Bryan*

CE 131. *Structural Mechanics I.* Prerequisites: Egr 73 and Math 63. 3 s.h. *Brown*

CE 133. *Structural Design I.* Prerequisite: Egr 73. Concurrent: CE 131. 3 s.h. *Palmer*

CE 134. *Structural Design II.* Prerequisite: CE 131. 3 s.h. *Palmer*

CE 139. *Introduction to Soil Mechanics.* Prerequisites: Egr 73 and 83, and CE 123. 3 s.h. *Vesić*

CE 140.* *Structural Mechanics II.* Prerequisite: CE 131. 3 s.h. *Brown*

CE 143, 144.* *Projects in Civil Engineering.* Prerequisite: approval of Director of Undergraduate Studies and of instructor under whom work will be done. 1-6 s.h.

CE 146.* *Professional Engineering.* Prerequisite: senior standing. 2 s.h. *Palmer*

CE 148.* *Structural Engineering.* Prerequisites: CE 133 and 134. 3 s.h. *Palmer*

CE 150. *Engineering Systems Analysis.* Prerequisite: senior standing. 2 s.h.

CE 201.* *Advanced Mechanics of Materials.* 3 s.h. *Dvorak*

CE 202.* *Experimental Mechanics.* 3 s.h. *Hill*

CE 204.* *Plates and Shells.* Prerequisite: CE 201 or equivalent. 3 s.h. *Hill*

CE 205.* *Elasticity.* Prerequisite: CE 201 or equivalent. 3 s.h. *Dvorak and Hill*

CE 211.* *Mechanical Behavior of Materials.* Corequisite: CE 201. 3 s.h. *Kumar*

CE 212.* *Structural Materials.* Prerequisite: CE 211. 3 s.h. *Dvorak and Kumar*

CE 221.* *Incompressible Fluid Flow.* 3 s.h. *Muga*

CE 222.* *Open Channel Flow.* 3 s.h. *Muga*

CE 223.* *Flow Through Porous Media.* 3 s.h. *Muga*

CE 224.* *Coastal and Tidal Hydraulics.* 3 s.h. *Muga*

CE 231.* *Structural Engineering.* 3 s.h. *Brown*

CE 232.* *Reinforced Concrete Design.* 3 s.h. *Brown*

CE 233.* *Prestressed Concrete Design.* 3 s.h. *Brown*

CE 235.* *Foundation Engineering.* 3 s.h. *Vesić*

CE 236.* *Earth Structures.* 3 s.h. *Vesić*

CE 243, 244.* *Sanitary Engineering Unit Operations and Process Design.* 6 s.h. *Bryan*

CE 250.* *Engineering Analysis.* 3 s.h. *Wilson*

*Courses marked with an asterisk are offered only upon sufficient demand; enrollment is limited.

Electrical Engineering

Professor Owen, *Chairman*; Professor Meier, *Director of Undergraduate Studies*; Professors Artley, Kerr, and Wilson; Visiting Professor Trickey; Associate Professors Hacker, Joines, Kraybill, Marinos, Nolte, Pilkington, Thurstone, and Wells; Adjunct Associate Professors Burger, Olive, and Wortman; Assistant Professors George and Wang; Adjunct Assistant Professor Parker

EE 161. *Electronics and Signals.* Prerequisite: Egr 113. 3 s.h. *Owen and Wilson*

EE 162. *Electromechanical Energy Conversion.* Prerequisites: Egr 113, 123, 163. 2 s.h. *Trickey and Wilson*

EE 163. *Physical Electronics.* Prerequisites: Egr 163 and Physics 161. Corequisite: EE 164. 3 s.h. *Hacker and Joines*

EE 164. *Electromagnetic Fields and Waves.* Prerequisite: Egr 163. 3 s.h. *Kerr and Wang*

EE 167. *Design Colloquium.* 2 s.h. *Meier*

EE 173-174.* *Projects in Electrical Engineering.* Open to seniors in the Graduation with Distinction Program, or to those with previous experience directly related to the proposed project. Approval of Director of Undergraduate Studies required. 1-6 s.h. *Staff*

EE 185. *Pulse and Digital Electronics.* 3 s.h. *George*

EE 186. *Modulation Systems and Noise.* Prerequisite: EE 161. 3 s.h. *Nolte*

EE 187. *Electronic Processes in Materials.* Prerequisite: EE 163. 3 s.h. *Hacker*

EE 188. *Dynamics of Electromechanical Energy Conversion.* Prerequisite: EE 162. 3 s.h. *Trickey*

EE 195.* *Nuclear Engineering Fundamentals.* Prerequisite: Physics 161. 3 s.h. *Wortman*

EE 196. *Microwaves and Quantum Electronics.* Prerequisite: EE 164. 3 s.h. *Joines*

EE 199.* *Linear Feedback Systems.* Prerequisite: permission of instructor. 3 s.h. *Wells*

EE 203. *Random Signals and Noise.* 3 s.h. *Nolte and Owen*

EE 204. *Information Theory and Communication Systems.* Prerequisite: EE 203. 3 s.h. *Kerr and Nolte*

EE 205. *Signal Detection and Extraction Theory.* Prerequisite: EE 203 or permission of instructor. 3 s.h. *Nolte*

EE 206. *Switching and Logic Networks.* Prerequisite: permission of instructor. 3 s.h. *Marinos*

EE 211. *Solid State Theory.* Prerequisite: permission of instructor. 3 s.h. *George and Hacker*

EE 212. *Solid State Materials.* Prerequisite: EE 211. 3 s.h. *Hacker*

EE 213. *Principles of Magnetism.* Prerequisite: EE 211 or permission of instructor. 3 s.h. *Artley and Hacker*

EE 215. *Semiconductor Physics.* Prerequisite: EE 211 or permission of instructor. 3 s.h. *Hacker*

EE 217. *Masers.* Prerequisite: permission of instructor. 3 s.h. *George*

EE 222. *Nonlinear Analysis.* Prerequisite: permission of instructor. 3 s.h. *Wilson*

EE 225. *Semiconductor Electronic Circuits.* Prerequisite: permission of instructor. 3 s.h. *Joines and Owen*

EE 227. *Network Synthesis.* Prerequisite: permission of instructor. 3 s.h. *George and Marinos*

EE 241. *Linear Control Systems.* Prerequisite: permission of instructor. Credit not given for both EE 199 and EE 241. 3 s.h. *Wells*

EE 244. *Selected Topics in Control Systems.* Prerequisite: EE 203 and either EE 199 or EE 241. 3 s.h. *Wells*

EE 259. *Advanced Electric Energy Conversion.* Prerequisite: permission of instructor. 3 s.h. *Trickey*

EE 265. *Advanced Topics in Electrical Engineering.* Prerequisite: approval of the Director of Graduate Studies and of instructor under whom work will be done. 1-3 s.h. *Staff*

EE 271. *Electromagnetic Theory.* Prerequisite: permission of instructor. 3 s.h. *Joines*

EE 272. *Applications of Electromagnetic Theory.* Prerequisite: EE 271. 3 s.h. *Joines*

Mechanical Engineering

Professor Chaddock, *Chairman*; Professor Kenyon, *Director of Undergraduate Studies*; Professors Linderoth, Macduff, Meriam, and Pearsall; Associate Professors Clark, Elsevier, and Harman; Adjunct Associate Professor Murray; Assistant Professors Buzzard, Lewis, Nash, Shepard, Werner, and Wright; Mr. Warner

ME 102. *Thermodynamics II.* Prerequisite: Egr 101. 3 s.h. *Elsevier*

ME 111.* *Physical Metallurgy.* Prerequisite: Egr 83. 3 s.h. *Shepard*

ME 112.* *Polymer Science.* Prerequisite: Egr 83. 3 s.h. *Pearsall*

ME 122.* *Transport Phenomena.* Prerequisite: Egr 133 and 143, Math 111. 3 s.h. *Chaddock and Werner*

ME 128.* *Dynamics of Gases.* Prerequisite: ME 102. Concurrent: ME 106. 3 s.h. *Werner*

ME 133. *Mechanical Design I.* Prerequisite: Math 63. Concurrent: Egr 123. 3 s.h. *Nash*

ME 134. *Mechanical Design II.* Prerequisite: ME 133. 2 s.h. *Linderoth*

ME 135. *Vibration Control.* Prerequisites: Math 63 and ME 133. 3 s.h. *Macduff*

ME 136. *Response of Systems.* Concurrent: Math 111. 3 s.h. *Macduff*

ME 153.* *Heating, Air Conditioning and Refrigeration.* Prerequisite: ME 102 and 106. 3 s.h. *Elsevier*

ME 156.* *Combustion Engines.* Prerequisite: ME 102. 3 s.h. *Elsevier*

ME 161. *Mechanical Engineering Laboratory.* Prerequisite: senior standing. 2 s.h. *Buzzard*

ME 165-166.* *Special Topics in Mechanical Engineering.* Prerequisite: permission of instructor and Director of Undergraduate Studies. 1-6 s.h. *Staff*

ME 167.* *Industrial Engineering.* Prerequisite: senior standing. 3 s.h. *Lewis*

ME 172.* *Kinematics of Mechanisms.* Prerequisite: ME 133. 3 s.h. *Nash*

ME 177.* *Computer Techniques for Simulation and Design. Wright*

ME 182.* *Fundamentals of Nuclear Engineering.* Prerequisite: permission of instructor. 3 s.h. *Kenyon*

ME 183.* *Power Plants.* Prerequisite: ME 102. 3 s.h. *Kenyon*

ME 197-198. *Projects in Mechanical Engineering.* Open to seniors upon assignment by the Chairman of the Department. Prerequisite: 3.0 average and senior standing. 1-6 s.h. *Staff*

ME 202.* *Theoretical Thermodynamics.* 3 s.h. *Elsevier and Harman*

ME 203.* *Introduction to Advanced Mechanics.* 3 s.h. *Macduff and Meriam*

ME 211.* *Theoretical and Applied Polymer Science.* 3 s.h. *Pearsall*

ME 221.* *Compressible Fluid Flow.* 3 s.h. *Harman and Werner*

ME 222.* *Heat Transfer.* 3 s.h. *Chaddock and Werner*

ME 226.* *Intermediate Fluid Mechanics.* 3 s.h. *Buzzard*

ME 231.* *Systems Response and Control.* 3 s.h. *Macduff and Wright*

ME 233.* *Fluid Control Systems.* 3 s.h. *Macduff*

ME 235.* *Advanced Mechanical Vibrations.* 3 s.h. *Macduff*

ME 251.* *Refrigeration and Cryogenics.* 3 s.h. *Chaddock*

ME 255.* *Energy Conversion.* 3 s.h. *Elsevier and Harman*

ME 265.* *Advanced Topics in Mechanical Engineering.* Prerequisite: approval of the Director of Graduate Studies and of the instructor under whom work will be done. 1-3 s.h. *Members of the graduate staff*

ME 270.* *Theory of Lubrication and Bearing Design.* 3 s.h. *Linderoth*

ME 280.* *Nuclear Reactor Power Cycles.* 3 s.h. *Kenyon*

Biomedical Engineering

Associate Professor Pilkington, *Chairman*; Professor Moore, Associate Professors Clark, Hills and Thurstone; Assistant Professors Hammond and Wachtel

BME 191-192. *Projects in Biomedical Engineering.* 1-6 s.h. *Staff*

BME 201. *Introductory Biomedical Engineering.* 3 s.h. *Wachtel and Pilkington*

BME 202. *Introductory Biomedical Engineering II.* Prerequisite: BME 201. 3 units. *Thurstone, Clark, and Hills*

BME-265. *Advanced Topics in Biomedical Engineering.* 1-3 s.h. *Staff*

The Divinity School

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General Information

Historical Statement

The Indenture of Trust signed on December 11, 1924, by Mr. James B. Duke, which established Duke University, mentioned first among its objects the training of ministers of the Gospel. The Divinity School was, accordingly, the first of the graduate professional schools to be organized. Its work began with the year 1926-1927, the formal opening exercises being held on November 9, 1926.

The Reverend Doctor Edmund Davison Soper was the first Dean of the Divinity School. He resigned in 1928 to become President of Ohio Wesleyan University, and was succeeded by the Reverend Doctor Elbert Russell, and the latter in turn in 1941 by the Reverend Doctor Paul Neff Garber. In 1944, Dean Garber was elected to the episcopacy of The Methodist Church, and Doctor Harvie Branscomb assumed the duties of the Dean's office. In 1946, Dean Branscomb became Chancellor of Vanderbilt University, and in 1947 the Reverend Doctor Paul E. Root was elected Dean but died before he could assume the office. The Reverend Doctor Harold A. Bosley became Dean in 1947 and resigned in 1950 to become the pastor of the First Methodist Church, Evanston, Ill. The Reverend Doctor James Cannon was appointed Dean of the Divinity School, March 1, 1951. After a period marked by important administrative integration of the School, Doctor Cannon resigned the duties of deanship, September 30, 1958. The Reverend Professor Robert Earl

Cushman was elected Dean and assumed the responsibilities of the office on October 1, 1958.

The Role of the Divinity School

The Divinity School represents theological inquiry and learning within the greater University. By history and indenture, it stands squarely within the Christian tradition and recognizes its distinctive lineage in, as well as a continuing obligation toward, the United Methodist Church. It has been from its inception ecumenical in aspiration, teaching, and practice. Ecumenical also is the actual membership of its faculty. Educational policy has consistently aspired to nurture a Christian understanding "truly catholic, truly evangelical, and truly reformed."

The presiding purpose of the Divinity School is education for ministry. Ministry in Christ's name to the world increasingly assumes manifold forms. Provision for these variations of ministry is expressly supplied in the curricular resources of the School. However, while the conventional and inherited styles of ministry are now certainly undergoing change, the Divinity School Curriculum continues to prepare students for informed and discriminating discharge of the historic offices of church and congregation through the ministry of Word and Sacrament, pastoral care, and the teaching office. Whatever form or context "the local church" of tomorrow may assume, Divinity School education remains predicated upon the historically grounded probability that these offices will remain.

Under the guidance of this perspective, the Divinity School aspires to prepare adequately qualified students for mature espousal of their vocation, with disciplined intelligence informed by sound learning, and equipped for worthy professional service. This is regarded as a service to the Church, to the world, and, pre-eminently, to the Lord of the Church.

Education for Ministry

The Divinity School receives students from many Christian denominations and aspires to offer its educational resources to representatives of all communions who seek education for ministry. While the aim of the School is not general but ministerial education, its resources are offered to all qualified students aspiring to varying vocations in Christian life and work. The School's primary reason for being remains, however, preparation of persons for ordination or professional lay vocations. To this end, the School is obliged to husband its scholarship resources, giving priority consideration to persons with declared ministerial aims. Thus,

students are strongly advised to secure ecclesiastical endorsement of their Church prior to admission and no later than the beginning of their Middler year.

The Relation of the Divinity School to Duke University

The Divinity School is an integral part of the University and shares fully in its activities, privileges, and responsibilities. The Sunday services in the University Chapel give Divinity School students an opportunity to hear each year a number of leading ministers of the country. The University Libraries make easily accessible a rich collection of more than 2,000,000 volumes. Selected courses in the Graduate School of Arts and Sciences and in the professional schools are open to Divinity School students without payment of additional fees. The general cultural and recreational resources of the University are available to them on the same basis as to other students.



Courses of Study and Requirements for Degrees

Degree Programs Offered by the Divinity School

The academic work of the Divinity School embraces three degree programs. These are the basic degree programs ordinarily of three academic years, leading to the Master of Divinity degree (M.Div.); a one-year program beyond the basic degree, the Master of Theology (Th.M.); and a third program of two academic years leading to the degree of Master of Religious Education (M.R.E.). All are graduate-professional degrees. Admission to candidacy for the Master of Divinity and Master of Religious Education degrees presupposes the completion of the A.B. or its equivalent.

Students preparing for ordination to the Christian ministry, and requiring appropriate graduate-professional education, will regularly enroll for the Master of Divinity degree. Students whose acquired academic standing, under this basic degree program, entitles them to further specialized study may advance their command of selected theological disciplines by applying for an additional year of studies leading to the Master of Theology degree. Together, these two degree programs constitute a sequence. Although the Master of Divinity degree fulfills requirements for ordination by prevailing ecclesiastical standards, the

Th.M. program may assist in assuring a larger measure of professional preparation. Application for admission to the Th.M. program is open to graduates of other schools who have completed the basic theological degree.

The Master of Religious Education program is designed to prepare qualified persons, ordinarily not seeking ordination, for a ministry of Christian education in local churches or other contexts. The course of study is arranged to provide grounding in Biblical, historical, and theological disciplines as essential background for instruction in and exercise of professional competence in curricular planning, teaching methods, and supervision of educational programs for various age groups.

The specific requirements for each of these degrees are found in the succeeding pages. It is evident that completed course work cannot be credited toward more than one degree. Reciprocal transfer of credit for course work taken under either the M.Div. or the M.R.E. program requires the permission of the Dean.

Doctoral Studies Accredited by the Graduate School of Arts and Sciences

The Divinity School provides a substantial body of course offerings at an advanced level in Biblical, historical, and systematic and contemporary theological disciplines that are accredited alike by the Graduate School of Arts and Sciences and the Faculty of the Divinity School, and lead to the Doctor of Philosophy degree. Sharing responsibility with the University Department of Religion for staffing and curricular provision of this course of study, the Divinity School is the principal contributor to the Program of Graduate Studies in Religion. Since, however, the Ph.D. in Religion is certified and awarded under the Graduate School of Arts and Sciences, the doctoral student's admission and matriculation are administered under that division of Duke University.

With few exceptions, most courses in the Divinity School catalogue carrying a "200" number or above and belonging to the fields noted above, are applicable to doctoral programs of study.

Candidacy for the doctoral degree in Religion ordinarily presupposes the holding of the basic theological degree, the B.D. or equivalent. Qualified persons who desire to pursue studies leading to the degrees of M.A. or Ph.D. in Religion, under the administration of the Graduate School of Arts and Sciences, are advised to apply to the Dean of that School. Inquiries concerning fellowships or specific requirements of the Program of Graduate Studies in Religion may be addressed to Professor Franklin W. Young, Director, 209 Divinity School.

Recent Curricular Revision

In 1948 a greatly altered curriculum, providing for both vocational differentiation and area concentration in student programs, was introduced and was in force until 1959 when further alterations and articulations of that program were instituted.

Recently, after extensive study, a revised curriculum leading to the basic theological degree was provisionally instituted in the fall of 1967 as subject to further emendations. It was published in the 1968 *Bulletin.* Thereafter, an authorized committee of the Faculty, pursuing certain lines of the 1967 program, but empowered to raise prior questions concerning the aims and goals of timely theological education in a university context, submitted its preliminary report in the fall of 1968 to the Faculty and the authorized committee of the Co-ordinating Council for scrutiny and suggestions. After full assessment of the bearing of all commentary and criticism, the presently offered program of studies leading to the Master of Divinity degree was adopted by faculty action January 22, 1969, and is herewith published. Under this program, and until it may be further altered by due process, students matriculating for the Master of Divinity degree at Duke University are expected, as a condition of admission, to formulate and pursue their theological education.

Having undertaken and effected major curricular alteration and updating four times in two decades, the Divinity School and its Faculty believes it has shown itself not insensitive to the need for change in a changing society. It is now the judgment of the faculty and the Dean that any curriculum is only a more or less adequate vehicle of unavoidably multiple educational purposes that are not fully capable of harmonization, and that, in the end, fruitful education must depend upon student and faculty mutuality, utilization of resources, diligent application, and positive motivation, as well as good will.

The currently published basic degree program is, in sum, the resultant of earnest and searching consultation and inquiry extending through the years 1965-1969. New directions of critical reflection represented by the Bridston-Culver report, the Fielding Report, the AATS "Task Force" recommendations, the Sewanee Consultation, together with attention to numerous developments in sister institutions have strongly contributed to the present curricular program. It seeks to be a positive response to (1) the challenge to provide an adequate "professional" education, "education for ministry;" (2) needed variability of ministeries in today's world; (3) the norms of university education; and (4) the perennial summons of the abiding Christian tradition.

Finally, the basic degree program becomes effective in the Fall

Semester 1969 for all students other than seniors graduating in June 1970.

Aims of the Curriculum

The aims of the basic degree program focus upon four goals, four areas of personal and curricular responsibility also deemed to be four life-long tasks which should be strongly advanced during the seminary years:

1. *The Christian Tradition*—acquiring a basic understanding of the Biblical, historical, and theological heritage;
2. *Self-Understanding*—progress in personal and professional maturity: personal identity, life style as an instrument of ministry, major drives, handling of conflict, resources, professional competency, etc.; coupled with a sensitivity to the world in which we minister: its social forces, its power structures, its potential for humanization—and dehumanization;
3. *Thinking Theologically*—ability to reflect about major theological and social issues, to define current issues in theological terms and theological issues in contemporary "secular" terms;
4. *Ministering in Context*—ability to conceptualize and participate effectively in some contemporary ministry.

Obviously goals of such scope cannot be neatly "programmed" in any curriculum, and the degree of achievement (in seminary and beyond) will vary widely with the individual and his own motives and incentives.

The Basic Curriculum—General Description

The basic curriculum leading to the Master of Divinity degree provides for foundational courses in Biblical, Historical, Theological, and Ministry Studies, representative of the tradition and regarded as indispensable background for subsequent elective work and individual program formation.

These required courses total twenty-four (24) of the seventy-five (75) semester hours necessary for graduation. The opportunity of Advanced Standing (see p. 40) adds further variability to the academic program of the Junior student, depending upon the nature and quality of his undergraduate academic work.

Required courses may be staffed by one or more professors and are planned to treat the subject matter both in scope and depth at the graduate level.

The Ministry Seminars of the first and second semesters of the Junior year are intentionally introductory to their field and subject, offer experience in group learning, and are required of all entering students. Junior Colloquia I and II are required, carry no credit, and offer enriching experience in group dynamics and self-understanding.

One elective course is available in each semester of the Junior year and

may be utilized for language study in either Greek or Hebrew or other Biblical language as the student may be qualified. A total of fifty-one (51) semester hours are available for the working out of the students' individualized program of studies leading to specialized preparation in academic depth and for purposes of professional ministerial competence.

The formulation of the student's course of studies is guided by (*a*) certain broad but normative recommendations for area distribution of courses and (*b*) the advice and counsel of appointed faculty advisors or authorized directors.

All academic programs are subject to the review of the Committee on Student Academic Programs and the Dean. The declared vocational and professional objective of the student is of central importance both to the student and his faculty adviser in planning the student's comprehensive study program.

Six semesters of residential study are ordinarily required for the completion of the degree. On permission of the Dean, certified nonresidential study, not exceeding the equivalent of twenty-four (24) semester hours, may be permitted to a candidate for the basic degree.

The normal course load per semester is twelve (12) or thirteen (13) semester hours. The delimitation of the semester course-hour load and the total credit hour requirement for graduation entitles both student and instructor to expectations of substantial student investment and accomplishment in individual courses. The emphasis of the curriculum, like that of its immediate predecessor, is upon depth and competence rather than upon excessive scope.

General Features of the Basic Curriculum—A Summary

A total requirement of 75 semester hours for graduation.

A normal academic load of four courses with credit.

Junior Seminars and Colloquia in the Fall and Spring semesters of the first year.

In Biblical studies: utilization of an elective course in the Junior or subsequent years for students of Biblical languages.

Demonstrated competence in the utilization of one "research tool," acquired prior to or following matriculation for the Master of Divinity degree.

Planned distribution of studies to include representative areas of the curriculum guided by professional aims, with concentration in any one subdivision of the curriculum of not more than five advanced courses.

Field education: an approved assignment in field education under supervision with credit.

Ministering-in-Context: presupposing an approved and supervised field education project in specialized settings, with accompanying guided research, project paper, and faculty evaluation, six semester hours credit in the Senior year.

General Academic Program

Master Schedule

The Curricular Paradigm

Junior Year

Fall Semester	*s.h.*	*Spring Semester*	*s.h.*
Old Testament (or OT elective for Advanced Standing)	4	New Testament (or NT elective for Advanced Standing)	4
History of Christianity I (or CH or HT elective for Advanced Standing)	4	History of Christianity II (or CH or HT elective for Advanced Standing)	4
Church and Ministry Seminar	2	Person and Society Seminar	2
Junior Colloquium I		Junior Colloquium II	
Elective	3	Elective	3
	13		13

Middler Year

Fall Semester	*s.h.*	*Spring Semester*	*s.h.*
Systematic Theology	4	Theological Issues Seminar	3
Elective	3	Elective	3
Elective	3	Elective	3
Elective	3	Elective	3
	13		12

Senior Year

Fall Semester	*s.h.*	*Spring Semester*	*s.h.*
Ministering in Context I	3	Ministering in Context	3
Elective	3	Elective	3
Elective	3	Elective	3
Elective	3	Elective	3
	12		12

The Honors Program of the Basic Curriculum

Effective in the Fall Semester of 1969 a new Honors Program replaces the Honors Programs of former years.

Suitable and related to provisions of the New Curriculum, the new Program combines features of the former Honors II and Honors III Programs. Leading to the Master of Divinity degree, it is open to students

admitted to regular course of study who, in virtue of superior undergraduate record and achievement, give promise of capacity for more rapid advancement toward independent utilization of the resources of curriculum, library, and faculty supervision.

Admission Procedures

A student applying for admission to the Divinity School through the office of the Registrar may apply at the same time for admission to the Honors Program. Procedures and requirements are as follows: (1) The student must submit a "B+" or better undergraduate record. (2) His application will be reviewed by the Faculty Committee on Honors. This committee may require of the student an interview, if necessary, at the time of Fall matriculation. (3) He must submit with the application his scores on the Graduate Record Examination or other comparable test scores as the committee may request.

Notice of the action of the committee will not necessarily be coincident with notice of admission to the Divinity School, since two different committee actions are involved and because of the special procedures involving Honors applicants noted above. However, with submission of all required credentials, and barring the need of an interview, of which the student would be formally notified, the Honors Program Committee will give notice of action not later than April 15 for applicants who have submitted all credentials prior to March 15. Late applications will be acted upon as promptly as possible.

Admission to the Honors Program at the end of the Junior year is provided for and will be contingent upon superior performance in course work (ordinarily at least a "B+" average) and the approval by the Honors Program Committee. Applicants completing their course work of the Junior year will apply to the Honors Program Committee, through the office of the Registrar, not later than July 1 preceding their Middler year.

Synopsis of the Honors Program

Junior Year. The Junior Honors student's program follows the regular academic program for the first and second semesters of residence in the Divinity School.

Middler Year. First Semester: The student registers for the required course in Systematic Theology, and for one additional elective.

Second Semester: The student registers for two electives with a minimum of 6 semester hours.

Honors students will employ free time allowed by their schedule for the purpose of independent study in the area of their chosen concentration. At a date set by the Committee on Honors, students stand for a comprehensive examination in a defined area representative of the extent

and focus of their independent study. Divisional representatives of the faculty will supply Honors students during the first semester of residence with bibliography, and advice regarding the limits, requirements, and standards of the comprehensive.

Senior Year. First Semester: The student registers for one seminar in the field of his concentration.

Second Semester: The student registers for one seminar in the field of his concentration. Before April 15 of his last semester (or December 15 if his sixth semester falls in the autumn term) the student presents a *thesis* on a subject appropriate to his area of concentration.

Provisions for advanced standing and for reading out courses apply to Honors students where appropriate.

The Research Tool and Field Education requirements of the Regular Program apply to students enrolled in Honors studies. Honors students who elect the Ministry-in-Context may embody the findings of the related projects in their theses. Honors students may in Middler and Senior years enroll in regular curricular offerings of the Divinity School, and they may participate in Field Education enterprises, including the Ministry-in-Context. They may also enroll for up to 6 semester hours of cognate studies, additional to designated electives, in the Graduate School of Duke University with the permission of their adviser and the Honors Program Supervisor.

Administration of the Program

The Honors student will be assigned to a faculty Adviser with whom consultation will be imperative. His program of studies is subject to review by the Honors Program Committee at the end of each semester to determine his eligibility for continuance in the Program. His prospective course of study for each succeeding semester requires the approval of both his faculty Adviser and the Supervisor of the Honors Program. All programs of study are subject to review of the Dean and the Committee on Academic Standing.

Students in the Honors Program are not required to complete their degrees in three academic years, but they must fulfill at least six semesters of academic residence in the Divinity School.

Transcripts and Grades

When it becomes necessary to supply a transcript of grades for Honors Study, he will be credited with hours in the divisional fields corresponding to his focus of study. Grades shall be recorded as "A" when he has, in the judgment of the instructor, performed with distinction or, otherwise, as "B". If at any time a student falls below an acceptable level of performance in the Honors Program, he will be advised to return to study of the regular curriculum. In such case he will have placed upon his record

credit for the number of hours which he would normally have acquired at this chronological point in his career had he pursued the normal course of study. Hours will be assigned to divisional areas which correspond to the areas of his independent study. Grades for these hours will be determined by his Adviser.

Administration of the Curriculum

General Regulations

1. Full-time students are required to enroll for the required courses of the curriculum or for alternative courses offered for Advanced Standing in the order provided by the master schedule of the curricular paradigm.

2. Students in programs leading to either the Master of Divinity or Master of Religious Education degree are required at the time of each registration period to plan their course of study with consultation and approval of their assigned faculty advisers.

3. The schedules or academic programs of all students in candidacy for Divinity School degrees will be formulated in consultation with a designated faculty adviser or director. Such programs are subject to review and approval of the Committee on Student Academic Programs and the Dean.

4. Student Pastors in candidacy for the Master of Divinity degree under any of the three programs of study are advised that their program will normally require a fourth academic year. Modification of this schedule of expectancy will be treated with reserve and will require the express approval of the Dean on recommendation of the Director of Field Education.

a. Students with pastoral charges, or comparable extra-curricular responsibilities, will normally enroll for not less than seven (7) nor more than ten (10) semester hours.

b. An entering student desiring to serve as a student pastor must have the approval of the Director of Field Education and must participate in an Orientation and Training Program (see "Field Education," page 44).

c. Students who accept pastoral charges in their Middler or Senior years are required to have the prior approval of the Director of Field Education. Such students will be required to restrict their course work in accordance with the regulation stated above (4a) governing the course load of all student pastors-in-charge.

d. Modifications of these regulations, in the case of individual student pastors, will be scrupulously administered in terms of loca-

tion of charge and commuting distance, magnitude of assignment, and residence during the academic week. Demonstrated academic achievement will regularly condition any modification of the normal limitation. Since adequate indication of the student's academic proficiency will not be available before the completion of the first academic year, no modification of regulation (4a) for Junior students is allowed.

5. Student Assistant Pastors (not pastors-in-charge) may enroll for a full academic load providing: they are not on probation, are under the supervision of the Director of Field Education, and possess field duties involving no more than 15 hours per week.

6. A student in candidacy for the Master of Divinity or Master of Religious Education degree shall enroll for no less than seven (7) semester hours in any semester. Variations from this regulation shall be by approval of the Dean.

7. Study abroad, with transferable credit toward graduation, may be allowed to a candidate for the Master of Divinity degree by approval of the Dean on recommendation of the Director of Student Life. Permission will not be granted in the absence of a strong academic record. Ordinarily, permission for such study may be granted to students who have completed the work of the Middler year. Both the institution abroad and a specific course of study proposed must have the prior approval of the Chairman of the Registration Committee and the Dean.

8. Transfer of credit to the Divinity School of Duke University, leading to candidacy for the degree of Master of Divinity, ordinarily may not exceed in amount more than one-half of the academic credits (in proportional evaluation) required for fulfillment of degree candidacy (see Admission, page 40).

9. Speical Student status may be granted on recommendation of the Director of Admissions and the Registrar for approval of the Dean. Particular circumstances must prevail in the case of such admissions and will not be honored to permit circumvention of requirements of regular academic programs. Special students are not eligible for tuition or other scholarship grants.

10. Auditing of courses is permitted on notice to the Registrar and by permission of the Dean and the faculty instructor concerned. Auditors, not in regular course of study as candidates for degrees, are subject to a $30.00 fee by University regulations.

11. Students in candidacy for a degree who secure minor employment outside the channels of the Field Education Office are required to inform the Director of Field Education. Students carrying an outside employment work load of more than 15 hours weekly may be required to limit their academic load.

Curricular Provisions and Procedures

The Order of Sequence in Student Programs. Admission to candidacy for the Master of Divinity degree is admission to regular program of studies. The General Academic Program constitutes the master prospectus and schedule for the basic theological degree. This prospectus defines the normal sequence of the student's developing program. Variations of sequence are excluded save in the instance of students on limited programs, as in the case of student pastors, arranging their studies over four years, or special students.

Mid-Year Matriculation for the Junior Year. Students who matriculate for the second semester of the Junior year in January will be responsible for fulfilling requirements of the first semester of the Junior year the succeeding fall semester, save for Colloquium I and Junior Seminar 9. For the above mentioned students, a cognate course, alternative to Junior Seminar 9, is prescribed and will be selected in consultation with the student's faculty adviser. Registration for said course shall ordinarily come in the succeeding fall semester.

Students whose work is failing in either Seminar 9 or 10 are required to retake the course failed or to meet a substitute requirement approved by the chairman of the committee on Student Academic Programs.

Administration of Advanced Standing. The rationale and conditions of advanced standing are provided in the section entitled "Admissions" (See p. 40). The provision is, in principle, applicable exclusively to required courses. Students infrequently qualify for advanced standing in Early and Medieval Church History (History of Christianity I). The principle is not applicable to the introductory course in Systematic Theology, and waiver of this rule will require satisfactory performance on a prescribed written examination. The principle of advanced standing may, on concurrence of the faculty adviser and the course instructor, be applied to distinctly introductory courses of the several fields which a student elects, provided that the same conditions applicable in qualification for advanced standing respecting required courses shall also prevail respecting elective courses.

Students offered advanced standing prior to or at the time of matriculation may, after consultation with their faculty advisers, decline such standing and enroll in the required course.

A convenient summary of Advanced Standing options for required courses is as follows:

For Old Testament 11: O.T. 12; 101; 106 A, B, C, D; 201-202.

For New Testament 18: N.T. 103-104; 105; 107; 109; 116 A, B, C; 117 A, B, 118; 119.

For Hisory of Christianity I: C.H. 137; 138; 250; 329; 332.

For History of Christianity II: C.H. 251; H.T. 260; A.C. 296; 395.

Any student choosing, by virtue of eligibility for advanced standing, to substitute an elective course of three semester hours for the required course of four semester hours will have his total academic requirement (of 75 semester hours reduced by one hour) for each such substitution.

Language Study. A student entering the Divinity School with undergraduate preparation in Greek may elect to continue his studies in New Testament Greek at an advanced level. A Junior student desiring to begin the study of New Testament Greek may elect Hellenistic Greek 103-104.

A student with Advanced Standing in New Testament may elect six semester hours of New Testament Greek as his advanced option in lieu of the basic required course.

A student with two years of undergraduate Greek who desires to begin Hebrew in his Junior year may utilize his elective privileges of the first year for this purpose. He must have approval of his adviser and the instructor in Hebrew.

Students are discouraged from the study of Hebrew until they have satisfactorily completed at least one year of Hellenistic Greek.

Elective Studies and Professional Aims. The curriculum intends to serve graduate-professional aims with maximum flexibility. Fifty-one (51) elective course hours are available for proper ordering and programing to serve the ends of vocational and professional incentives. This latitude manifestly lays heavy responsibility upon the student to see that he submits himself to those disciplines that most suitably prepare him for his ministerial service.

In planning his course of study, therefore, he must in consultation with his faculty adviser shape his course program by enlarging understanding of his eventual professional responsibilities. To this end he may need to consult several members of the faculty and staff for guidance.

Professional ministries include those of the parish, preaching, teaching, and pastoral care; ministries of education in local churches and higher education; missions; campus ministry; specialized urban and rural ministries; chaplaincies: hospital, institutional, industrial, and military; teaching; religious journalism; audio-visual communications; church agencies and ecumenical ministries at home and abroad. For many of these the curriculum is inadequate and further specialized training will necessarily be sought elsewhere beyond the basic degree. For all of these ministries the student's program of studies can be shaped to be foundational and purposeful for the particular ministry in view.

Distribution of Elective Studies. 1. Students are encouraged to elect one course in each of the following areas or subdivisions of the curriculum beyond provisions supplied by any required courses, and to be selected with a view to the individual student's vocational and professional aims:

American Christianity	Biblical Exegesis
History of Religion	Pastoral Psychology

Christian Education	Christian Ethics
World Christianity and Ecumenics	Worship and Preaching
	Care of the Parish

(including Church and Community)

2. On the other hand, students are also encouraged to concentrate, ordinarily in not more than five advanced courses in any one subdivision of the curriculum, in an area directly supportive of and related to their vocational and professional intention.

Marked variations from these advisory guidelines will render the student's program admissible of review and revision by action of the faculty adviser, the Committee on Student Academic Programs and the Dean.

Research Tool Requirement. Each student is required to demonstrate competence in one Research Tool, e.g., Biblical language, ecclesiastical Latin, modern language, statistics and research design, sociological sampling and community survey, local church self-study, or a cognate course in the University which can be shown to have direct relevance to his proposed ministry. Such competence must be demonstrated by making significant use of the tool in one or more courses within the theological curriculum or in a field education or internship project.

a. In cases where the tool is acquired *prior* to seminary matriculation or in some extracurricular program of study, the student must make formal application to be allowed to demonstrate his competence by employing the tool for reading or research in an appropriate course or in a field education or internship project.
b. In cases where the tool is acquired *after* matriculation but through some other school of the University, academic credit of not more than 3 semester hours may be given for such work under a Divinity School course designation of "Research Tool," provided the student subsequently demonstrates competence by using the tool, as specified above.

General Field Education Requirement. Each student is required to complete one *approved* assignment in field education (with or without remuneration) under supervision.

Such assignments might include an internship, a summer of full-time work, two semesters of part-time work, or involvement in church or community service of direct pertinence to the student's intended ministry. The essential criteria for graduation credit would be that the amount and quality of supervision be approved by the Field Education Office, and that the student be required to evaluate and correlate the experience directly or through his Ministering in Context.

Ministering-in-Context Program

Purposes. The Ministering-in-Context project extends over both semesters of the senior year and carries a total of six semester hours of credit. The purpose of Ministering-in-Context is to provide continuity between ministry today and the preparation for it, by assisting each student: (*a*) to utilize interdisciplinary resources in understanding the personal and social issues of today's world; (*b*) to identify individual forms of ministry and to match his own personal resources with the plurality of demands put upon him; (*c*) to develop a professional role appropriate to traditional and experimental ministries; (*d*) to test competence and readiness for ministry; and (*e*) to develop the student's ability to provide conditions whereby a vital church and a meaningful ministry may come into being through his training, insight and commitment.

Proposed Schedule (Subject to Amendment)

Middler-Spring:

Brief prospectus: context, major issues, bibliography

Senior-Fall:

selection of adviser
four-five page outline of particular ministry
collection of literature, research data, etc.
first draft of project report

Senior Mid-Year:

evaluation of project paper (by adviser and two faculty members from other divisions)
counseling in regard to spring semester program

Senior-Spring

completion of project paper
participation in seminar to discuss issues
final evaluation of professional preparation (by student and committee)

Ordination and Disciplinary Requirements. Students preparing for ordination are strongly advised to fulfill denominational requirements for study of church polity. United Methodist students must attend to regulations of the *Discipline*, paragraph 344. Introduction to Christian Theology (C.T. 32) has been certified for the Disciplinary requirement in United Methodist doctrine.

Graduation Credits

It is the responsibility of each student to see that he meets all requirements for graduation, and to take his courses in proper sequence. He is

also responsible for seeing that any special permission granted him to deviate from the normal program is properly recorded in his personal files. Deviations from a normal academic program must be approved by the Dean on recommendation of the Director of Student Academic Programs.

Grading System

The grading system of the Divinity School employs the letters *A, B, C, D,* and *F,* which have been defined as follows: *A,* Excellent; *B,* Superior; *C,* Average; *D,* Inferior; *F,* Failure; *WP,* Withdrew Passing; *WF,* Withdrew Failing; *WI,* Withdrew Illness; *W,* Withdrew, discretion of the Dean; *I,* Incomplete; *P,* Passed; *N.C.,* Non-credit. (See section on Incompletes.) No percentage equivalents are stated. A student is expected to maintain an average of *C.*

In all courses where the instructor considers attendance a necessary part of the work of the course, a student may not receive a grade of over *C* if his absences total 12 per cent of the regular class periods, and if the absences total 24 per cent of the class periods he may not receive credit for the course.

Incompletes

A student may, with the permission of the instructor concerned, petition the Director of Student Life to receive a grade of "incomplete" in a course. Such permission may be granted when a student, through some circumstance beyond his control, such as illness, has been hindered from meeting the course requirements. No "incomplete" is recorded without permission in writing from the Director of Student Life. Ordinarily, an "incomplete" will not be approved in the case of students completing their academic work in the fall semester. An "Incomplete" automatically becomes an "F" unless it is removed through completion of assigned work by the following dates:

for "Incompletes" incurred in fall semester courses, March 15, following;
for "Incompletes" incurred in spring semester courses, October 15, following; and
for "Incompletes" incurred in summer courses, October 15, following.

Change of Course or Withdrawal

A student is permitted to change his registration for course work without incurring a penalty no later than completion of the second meeting of the course from which he desires to withdraw or, correspondingly, of the course to which he seeks admission.

No student shall be permitted to drop a course after the expiration of one-third of the period of instruction of the course without incurring failure, except for causes adjudged by the Director of Student Life to be beyond the student's control. Conditions of emergency and not considerations of convenience shall be regarded as determinative in considering requests.

Graduation with Distinction

Students who achieve a grade point average of 3.75 (A, 4; B, 3; C, 2; and D, 1) for over-all academic record in the Divinity School are granted the degree of Master of Divinity, *summa cum laude*. Students with a grade point average of 3.5 are awarded the degree, *magna cum laude*. Such distinction is specified on their diplomas.

The Master of Religious Education Degree

The course of study leading to this degree is designed for persons desiring to prepare for leadership and service in the educational ministry of the church.

Admission

Applications for admission to the Master of Religious Education program are evaluated by the same standards as those applicable to the Master of Divinity degree and admission requirements and procedures are also the same. Students planning to specialize in Christian Education should study carefully those sections of this *Bulletin* which contain statements of policy regarding the most appropriate prerequisite studies for theological education and the procedures to be followed in applying for admission. (See page 38).

Requirements

The Master of Religious Education degree normally requires two years, or four semesters, of residence and study and the fulfillment of the following three requirements:

1. Sixteen courses selected by the candidate in consultation with the Director of the program or his representative. (See paradigm of program below).
2. Field project, supervised by the Director of the program, with final oral examination by Committee.

A candidate having an academic average of *B* or better in undergraduate studies may be permitted to "read out" in a maximum of two courses usually scheduled one in each year, provided application for this privilege is approved by the Director of the program and the instructor(s) involved. A student not approved for "reading out" in the first year may qualify for this privilege in one course in the second year on the basis of a *B* or better average in the first year.

Program of Study for M.R.E. Degree

Required units

Church and Society Seminar and Colloquium (Fall semester, first year)	1
Persons and Ministry Seminar and Colloquium (Spring semester, first year)	1

*Limited electives**

Two courses in the Biblical Division	2
Two courses in the Historical Division	2
Two courses in the Theological Division	2
Two courses in the Ministerial Division (Other than Christian Education)	2
Four courses in Christian Education	4

Free electives

According to student's needs and interests†	2
TOTAL	16

Required project

Professional project, supervised by the Director of the M.R.E. program with final oral examination. Normally this project is scheduled in the second year, and may be arranged in either the fall or the spring semester.

The Master of Theology Degree

The course of study leading to the degree of Master of Theology is designed for graduates of accredited theological schools who desire to

*Limited electives may be completed through tutorials, if approved by the Director of the program and the instructor(s) involved, provided the total number of tutorials is no more than 4.

†All electives are chosen by the student in consultation with the Director of the program and subject to the approval of the Educational Affairs Council.

continue or resume their theological education for enhancement of professional competence in selected areas of study. Enrollment in the Th.M. degree program is open to a limited number of students who have received the B.D. (or the equivalent) with superior academic records.

Admission inquiries may be addressed to the Registrar for referral to the Director of the Th.M. program.

General Requirements

The general requirements for the degree of Master of Theology are:

1. Twenty-four semester hours of advanced studies, with an average grade of "B" (3.00 average on a 4.00 scale).
2. Superior performance in a comprehensive examination covering the major area of study. As an alternative to the Comprehensive Examination the student may elect to do a research project in his major area. This project shall carry 3 s.h. credit.
3. Residence for one academic year.

There are no general language requirements, but classical or modern languages may be required for certain programs (for example, Hebrew or Greek in Biblical studies).

The Program of Study

At least twelve of the required twenty-four hours must be taken in one of the basic divisions of study (Biblical, Historical, Theological, or Ministerial) which shall be designated as the candidate's major, and at least six hours in another of the divisions which shall be designated as the candidate's minor. No more than twelve hours may be taken in the summer sessions. No more than six semester hours of work completed in another accredited institution may be transferred and credited toward the degree. Ordinarily, no more than six hours may be taken through directed reading, and no more than three in any one semester or summer term. In the area of Pastoral Psychology, up to twelve hours may be taken through clinical training.

The comprehensive examination will be given at the close of the course of study for the degree, ordinarily in May or September.

The entire program of studies and comprehensive examination should be completed within twelve months. In some cases, the time limit may be extended, but in no case beyond three years.

The candidate majoring in Pastoral Psychology chooses between a program which emphasizes Clinical Pastoral Education in the institutional setting and one which emphasizes Pastoral Care and Counseling under supervision in the parish setting. The CPE program provides certified training through the Association for Clinical Pastoral Education;

the Pastoral Care and Counseling program provides supervised training toward certification by the American Association of Pastoral Counselors. In either case, Course PP277A (or its equivalent) is considered a prerequisite for a major in Pastoral Psychology. (The four semester hours credit are not applicable toward the twenty-four hours required for the degree, although the course will be indicated on the student's transcript). Accordingly, the student majoring in this area should ordinarily make provision for a program extending for a full calendar year, beginning the first full week in June.

Financial Aid

Candidates for the Th.M. degree are eligible for financial aid on the same basis as all regularly enrolled Divinity School students.

Please note in the pertinent sections of the chapter on "Financial Information" that the charges for tuition and general fee for the Th.M. degree are combined and are made on the basis of the number of semester hours taken, and that in order to be eligible for medical and surgical care a student must be taking at least seven hours.

Conduct of Students

Duke University expects and will require of all its students continuing loyal cooperation in developing and maintaining high standards of scholarship and conduct.

The University wishes to emphasize its policy that all students are subject to the rules and regulations of the University as currently in effect or from time to time put into effect by the appropriate authorities of the University.

Any student, in accepting admission, indicates his willingness to subscribe to and be governed by these rules and regulations and acknowledges the right of the University to take such disciplinary action, including suspension and/or expulsion, as may be deemed appropriate, for failure to abide by such rules and regulations or for conduct adjudged unsatisfactory or detrimental to the University.

Community Life

Divinity School Choir

A student organization of long standing is the Divinity School Choir. Membership in the Choir is open to all qualified students. The Choir sings regularly for the daily corporate worship and at special seasonal programs and services. New members are chosen by informal auditions held during the first week of fall classes. Auditions are arranged for all who are interested.

The Coordinating Council for Community Life

Beginning with the 1964-65 academic year, the Student Government Association was superseded by a Coordinating Council for Community Life. This Council is composed of representatives from the student body, faculty, administration, and Divinity Dames.

The purpose of the Council is, as the name implies, to coordinate the activities of the Divinity School community. Realizing that there are many shared interests and concerns within the community which cannot be expressed fully in a student body organization alone, the Council was created by a joint student-faculty committee and approved by participating groups.

The shared interests and activities of the community are expressed through the several committees of the Council. The Council has coordinating, reviewing, and initiating powers in matters affecting the common life.

Student members of the Council are elected by the three M.Div. classes, the M.R.E. candidates, and the Th.M. candidates. A student activity fee is collected at the beginning of each academic year to support the activities of the community. The fee, in recent years, has been seven dollars and fifty cents ($7.50). The funds are administered through committees and are spent on such projects as missions, social action, social events, and student publications.

Other Organizations

Divinity Dames

The wives of Divinity School students have an organization through which there is opportunity for informal fellowship during the period of the students' residency. For the past several years lecture courses, running for two-week periods in the fall and spring semesters, have provided instruction in various aspects of parish life and in theological and Biblical subjects and issues. The Dean and faculty are concerned to assist the wife to understand her husband's vocation and to participate appropriately.

The Duke Endowment Student Association

The Duke Endowment Student Association is the organization of students who participate in the Field Education Program.

At least six meetings per year are held for the purpose of fellowship and preparation for the field education responsibilities.

Publications

The Duke Divinity School Review

Three times each year (Autumn, Winter, and Spring) the Divinity School publishes a magazine designed to acquaint its readers with current theological thinking through the inclusion of public addresses given at the school, scholarly articles by faculty members and others, and book reviews. The *Review* is circulated free of charge to a mailing list of some 2,600, one-half of whom are alumni of the School and the other half

are interested friends, campus ministers, teachers, administrators, and librarians.

Directory and Response

In cooperation with the Dean's Office, students publish a faculty and student *Directory*. A paper entitled *Response* is published under their editorship twice monthly.



Financial Information

Fees and Expenses

Estimated Living Expenses

The total cost for a student to attend the Duke Divinity School varies according to individual tastes and requirements; however, experience indicates that a single student may expect to spend from $2,400 up, with the average approximately $2,600, and a married couple may expect to spend from $4,000 up.

Master of Divinity and Master of Religious Education Candidates

The table below lists only basic minimum expenditures. In addition to the fees cited here, there is an admission fee of $30.00 which is applied to the first term bill, and a room deposit of $25.00. (See the relevant sections in Admissions and Housing for full details.)

	Per Semester	*Per Year*
Tuition—M.Div. and M.R.E.	$443.50	$887.00
General Fee—M.Div. and M.R.E.	56.50	113.00
Approximate cost of meals	300.00	600.00
Room (double) Graduate Center	162.50	325.00

A student who is a candidate for either the M.Div. or M.R.E. degree shall be liable for the Tuition and General Fee for the number of semes-

ters required to complete the degree under the normal semester load. The M.Div. candidate will pay tuition for six (6) consecutive semesters and the M.R.E. candidate for four (4) consecutive semesters. If extra semesters are required to complete the degree, there will be no tuition for the extra semesters; however, the General Fee will be payable on a prorated basis.

The General Fee is in lieu of all special charges, and includes the following fees: matriculation, medical (provided student is taking at least seven hours), library, damage, commencement, and diploma.

Master of Theology Candidate

A student who is a candidate for the Th.M. degree will be liable for Tuition and General Fee, combined, on the basis of 24 semester hours at the rate of $40.00 per semester hour. All other costs and regulations for the Th.M. degree are the same as those for the M.Div. and M.R.E. degrees.

Special Student

A Special Student is one who is enrolled for academic credit, but who is not a candidate for a degree. The Tuition and General Fee will be charged on a prorated basis. Other costs and regulations are the same as those for the M.Div. and M.R.E. candidates. No financial aid is available.

Audit Fee

Anyone seeking to audit a course in the Divinity School must, with the consent of the instructor concerned, secure permission from the Dean's office. In accordance with the general University practice, a fee of $30.00 per course will be required of all auditors who are not enrolled students.

Athletic Fee. Divinity School students may secure admission to all regularly scheduled University athletic contests held on the University grounds during the entire academic year by payment of the athletic fee of $25.00 per year, plus any Federal tax that may be imposed. This fee is payable in the fall semester.

Payment and Penalty

Both the Tuition and the General Fee are due and payable not later than the day of registration for that semester. In unusual circumstances, a student may secure permission of the Dean to delay registration, provided it is not beyond the first week of classes and the student pays the $10.00 late registration fee. No student is admitted to classes until arrangements are made with the Bursar of the University for the settlement of fees.

Students matriculating in either semester at a date later than that prescribed in the catalogue shall pay to the Bursar of the University a penalty of $10.00. After the day of registration no refund of the General

Fee or Tuition will be made except for involuntary withdrawal to enter the Armed Services.

Students who are reported by the Bursar's Office as delinquent in their accounts will be debarred from credit in courses until cleared. Transcripts will not be issued for delinquent students.

Student Health

The payment of the General Fee entitles the student who is taking a minimum of seven hours to full medical and surgical care, with the exceptions noted below. This service is under the direction of the University Physician with the cooperation of the staff of Duke Hospital. It includes hospitalization, medical and surgical care, drugs, dressings, X-ray studies, and ward nursing. A charge for board is made at the same rate as in the University dining halls. Refraction of eyes, treatment of teeth, and of all chronic conditions, such as the removal of diseased tonsils, are not included in this service. The cost of any necessary braces and orthopedic appliances, as well as of special nursing, must be borne by the student.

Since the Student Health Program *does not cover students while away from the Duke Campus,* it is imperative that student pastors and assistant pastors (winter and/or summer) who are subjected to the hazards of highway travel with great frequency, secure complementary health and accident insurance for the full twelve month period. Students whose course load entitles them to full coverage under the Student Health Program are eligible to secure a complementary insurance policy, providing protection for the entire calendar year, through the University. Costs and details of the complementary policy are available from the Dean of Students. Students in internship programs carrying less than seven semester hours in any given semester are strongly encouraged to apply for this insurance. *Foreign students are required to hold this or another acceptable policy.*

Married students are required to carry insurance coverage for their dependents, providing for hospital, medical, and surgical care.

Living Accommodations

*Housing**

Rooms in residence halls are normally rented for the academic year, but for no period less than one semester or specified term. A limited number of single rooms are usually reserved for returning students.

*Information pertaining to residence halls and apartments is subject to change prior to September, 1970.

Each student assigned to the Town House Apartments is currently charged $495.00 for the academic year on the basis of three individuals to an apartment. Utility charges are included in these rates. Rental rates for space in double residence halls rooms range from $325 to $355 for the academic year.

Current rates for apartment units for married students range from $126 per month (including utility allowances) for an unfurnished one bedroom unit to $175 per month (without utilities) for a partially furnished three bedroom unit.

No refund on residence hall room rent or the rent for spaces in Town House Apartments is made to students who withdraw after the date of registration, except for those who involuntarily withdraw to enter the armed services. Such refunds will be made in accordance with the University's established schedules.

Married Students who desire assignment to apartments will be offered leases for specific periods. Cancellation procedures are stipulated in the agreements.

Reservations and Deposit Fee

Residence hall rooms and graduate women's apartments may be reserved by new applicants only if they have been accepted officially for admission to the Divinity School. Applications for rooms and apartments should be made to the Office of Housing Management, Duke Station, Durham, North Carolina. A $25.00 room deposit is required of each applicant before a residence hall room or women's apartment reservation is made. The initial room deposit is effective during the student's residence in the University residence halls or graduate women's apartment if attendance is continuous in regular academic years. The deposit will be refunded under the following conditions:

1. Within thirty days after the student has been graduated provided written notice is received at the Housing Office requesting refund.
2. Upon withdrawal from Duke University Residence Halls by students enrolled on the semester basis, provided written notice is received in the Housing Office by August 1st for cancellation of a reservation for the fall semester, and not later than January 15th for cancellation of a reservation for the spring semester.
3. When the reasons requiring withdrawal are beyond the student's control.

No refund of deposit will be made until the occupant has checked out of his room through the Office of Housing Management and has settled his account with the Bursar.

A resident student, in order to retain his room for the succeeding academic year, must make application at the Office of Housing Management for confirmation of the reservation.

The authorities of the University do not assume responsibility for persons selected as roommates. Each student is urged to select his roommate when the room is reserved. Any student who occupies a double room without a roommate will be given written notice from the Housing Office to obtain a roommate or he may be required to pay the rental consideration for the whole room. Apartment regulations are similar.

Any exchange of rooms must be made at the Housing Office. Persons exchanging rooms without the approval of the Housing Office will be subject to the charges for both rooms.

Rooms and apartments for graduate women are rented for the academic year but for no period of less than one semester without special arrangements. After the day of registration, no refund of room rent will be made except for involuntary withdrawal to enter the Armed Services. Such refunds will be made in accordance with the University's established schedule. Regulations governing the occupancy of rooms will be supplied by the Office of Housing Management to those students who make application for housing. Occupants are expected to abide by these regulations.

Dining Halls

Food service on both the Woman's College Campus and the West Campus is cafeteria style. The cost of meals approximates $300.00 per semester depending upon the needs and tastes of the individual. The dining facilities on the West Campus include two cafeterias with multiple choice menus and, in addition, the Oak Room, where full meals and *a la carte* items are served. The Graduate Center has a cafeteria which is open at meal hours and a coffee lounge which is open until 11:00 p.m. The prices are the same as in the West Campus Union.

Motor Vehicles

Each student possessing or maintaining a motor vehicle at Duke University shall register it annually at the beginning of the fall semester. If a student acquires a motor vehicle and maintains it at Duke University after academic registration, he must register it within five (5) calendar days after operation of vehicle on campus begins. Resident students are required to pay an annual parking fee of $30.00 for each automobile and $10.00 for each two-wheeled motor vehicle. The proper registration emblem must be displayed at all times.

At the time of registration of a motor vehicle, the following documents must be presented: (*a*) state vehicle registration certificate; (*b*) valid driver's license; (*c*) satisfactory evidence of automobile liability insurance coverage within limits of at least $10,000.00 per person and

$20,000.00 per accident for personal injuries, and $5,000.00 for property damage, as required by North Carolina Motor Vehicle Law.

Students will receive a copy of the Parking, Traffic and Safety Regulations when they register.

Student Aid

A student should select his school on the basis of educational opportunity. At the same time financial consideration will be a legitimate and often pressing concern. Each student should formulate at least a tentative plan for financing his seminary education. While the exact method of financing the full theological degree cannot be assured at the beginning, he should have a clear understanding of his expenses and the sources of income for his first year and the assurance that there exist ways of financing the subsequent years.

The Committee on Scholarship and Financial Aid will counsel the student concerning financial needs and possible resources. A first principle of our financial aid program is that basic financial responsibility belongs to the student who is expected to rely upon his personal and family resources and his earning and borrowing power. Financial aid is provided to supplement student resources to the extent of demonstrated need.

In estimating student budgets, the Financial Aid Office adds to the fixed cost of educational expenses (tuition, fees, etc.) the average cost per student, providing for variations occasioned by the student's status (single, married, dependents, student pastor, indebtedness, etc.) at the time of admission. Students are allowed to exercise freedom and express their legitimate individuality in the use of their funds, but financial aid support is necessarily determined by what is considered average for students within the same category. To maintain a creative and at the same time a realistic program of financial aid, it is essential both to understand and to follow basic principles undergirding the program.

Resources are not sufficient to guarantee the complete underwriting of every student's seminary education. However, it is the goal of the Financial Aid Office to assist each student in planning his financial program so that he will incur as little indebtedness as possible.

The Financial Aid Office constantly reviews available resources in order to assist the greatest number of students. It recommends assistance on the basis of demonstrated need and then within the limits of the conditions set forth governing each resource.

Financial assistance may consist of scholarships, loans, tuition grants, grants-in-aid, field education grants, and employment which may be worked out in various combinations on a year to year basis with reapplication and review each year.

Personal

These may be savings and earnings, gifts from family and friends, and, if married, earnings of spouse and gifts from parents of spouse. In calculating anticipated income, the student first considers his own resources.

Church

Many local churches and conferences or other governing bodies provide gifts and grants for theological education, such as Ministerial Training Funds which provide grants and/or service loans to theological students. The student makes application to his own church, Annual Conference, Presbytery, or other governing body. The Financial Aid Office cooperates with these church agencies in making recommendations and in handling the funds. Both United Methodist students and others must be under the care of the appropriate Church body to be eligible for church support. The School cannot compensate a student's indisposition to receive church funds when available on application.

The Divinity School

Scholarships

A limited number of scholarships are available to encourage qualified students to pursue their preparation for the Christian ministry. Such students ordinarily will not be eligible for remunerative employment during the academic year. When a student holding a scholarship is permitted to engage in remunerative employment, it is understood that adjustments may be made in the total Scholarship and Financial Aid Program for that student:

Junior Merit Scholarships. Junior Merit Scholarships are available to a limited number of students who have maintained an outstanding undergraduate record in scholarship and community life. Junior Merit Scholarships consist of: grants of $775; tuition grants in varying amounts up to full tuition if demonstrated need warrants; and, if the student applies, preference in the selection of students for the Summer Endowment and Field Education Program.

National United Methodist Scholarships. The General Board of Education of the United Methodist Church makes available two $500 scholarships to rising middlers who have made outstanding records in the first-year class.

Middler Honors Scholarships. A limited number of scholarships up to

$700 each are made available on application to rising middlers on the basis of academic attainment, character, and promise in the Christian ministry.

Rowe Scholarships for Seniors. Each year a limited number of Merit scholarships in varying amounts are awarded to rising seniors who have achieved academic excellence and who give unusual promise of service in the pastoral ministry.

Foreign Student Scholarships. In cooperation with the Crusade Scholarship Committee of The United Methodist Church and other authorized church agencies students are selected and are admitted to courses of study. Scholarships for such students are provided from the Lewis Clarence Kerner Scholarship Fund and from individual Churches and private philanthropy.

Th.M. Scholarships. A limited number of merit scholarships, based on academic achievement and financial need, are awarded each year.

M.R.E. Scholarships. A limited number of scholarships, based on need and academic achievement in undergraduate school, are available.

Tuition Grants

These are available in amounts commensurate with demonstrated need as adjudged by the Committee on Scholarships and Financial Aid. Entering students may apply, on notice of admission, by submitting the Financial Aid Inventory. Due to the educational objectives and limited resources of the school, students without ecclesiastical endorsement or unable to indicate a clear ministerial vocational aim may be admitted but without eligibility for a tuition grant. Beginning September, 1970, middler students without acceptable evidence of intended ordination or identifiable lay ministry will be ineligible for a tuition grant.

Field Education Grants

Varying amounts are made available through the Divinity School to students who choose to make participation in the Endowment and Field Education Program an integral part of their seminary training. This Program includes the following:

1. Summer Assistants.
2. Winter Assistants.
3. Student Pastors. See full description under section on Field Education.

Loans

Loan funds held in trust by the University, as well as United Methodist Student Loans and funds supplied by the Federal Government, through

the National Defense Education Act of 1958, are available to qualified students. Submit application by July 1.

Note: Unless otherwise indicated all correspondence concerning financial aid should be directed to: Financial Aid Office, The Divinity School, Duke University, Durham, N.C. 27706.

Employment

Students or wives desiring employment with the University should apply to the Director of Personnel, Duke University, Durham, North Carolina. Students or wives make their own arrangements for employment either in the City of Durham or on campus.

Financial Aid Resources

Certain special funds have been established, the income from which is used to provide financial aid through scholarships and Field Education Grants for students wishing to secure training in preparation for Christian ministry. The resources listed below include endowed funds and sources of annual contributions.

R. Ernest Atkinson Legacy

This legacy was established in 1952 under the will of the Reverend R. Ernest Atkinson of Richmond, Virginia, who was a member of the Trinity College Class of 1917.

Mary Reynolds Babcock Foundation Scholarships

Through the Mary Reynolds Babcock Foundation of Winston-Salem, North Carolina, a limited number of scholarships in an amount not exceeding $1,400 per year are granted to students in candidacy for the M.Div. degree, on nomination and decision of the Dean and Committee on Scholarships and Financial Aid.

E. M. Cole Fund

This fund was established in 1920 by Mr. Eugene M. Cole, a United Methodist layman of Charlotte, North Carolina.

Dickson Foundation Awards

The Dickson Foundation, Incorporated, of Mount Holly, North Carolina, has created a scholarship program for the purpose of providing

assistance to Divinity students who demonstrate financial need and superior ability.

Preference is given to children of employees of American and Efird Mills, Incorporated, and its subsidiaries, to residents of Gaston, Caldwell, and Catawba Counties, and to North Carolinians.

The Duke Endowment

Among the beneficiaries of The Duke Endowment, established in 1924, are the rural United Methodist churches of the two North Carolina Conferences. Under the Maintenance and Operation Program, Field Education Grants are available for Duke Divinity School students to participate as assistant pastors in rural United Methodist churches under the Endowment and Field Education Program.

N. Edward Edgerton Fund

This fund was established in 1939 by Mr. N. Edward Edgerton of Raleigh, North Carolina, an alumnus of Duke University of the Class of 1921.

Thomas Jefferson Finch Scholarship

In 1955 Mr. George David Finch, '24, and Mr. Brown Faucette Finch, '54, established an annual scholarship in the amount of $650 a year in memory of Mr. Thomas Jefferson Finch, Trinity College Class of 1884, who was the father and grandfather of the donors.

The James A. Gray Fund

In 1947 Mr. James A. Gray of Winston-Salem, North Carolina, presented the fund, which bears his name, to the Divinity School for use in expanding and maintaining its educational services in behalf of North Carolina churches and pastors.

P. Huber Hanes Scholarship

The late Mr. P. Huber Hanes, Sr. of Winston-Salem, North Carolina, an alumnus of Duke University of the Class of 1900, established for Duke University an annual scholarship fund, a portion of which is used to provide financial assistance for Divinity School students.

The Franklin Simpson Hickman Memorial Fund

In the summer of 1966 Mrs. Veva Castell Hickman established a memorial fund in memory of her husband, The Reverend Professor Franklin Simpson Hickman, who served as Professor of the Psychology of Religion, 1927-1953; was Dean of the Chapel of Duke University, 1932-

48; and the first Preacher to the University, 1938-53. The income of the Fund will give support to two enterprises: (1) a regular visiting lecturer in preaching, and (2) financial aid to students in the Master of Theology program who wish to specialize in the psychology of religion, or the psychological study of religious experience.

George M. Ivey Scholarship Fund

This fund was established in 1948 by gift of George M. Ivey, of Charlotte, North Carolina, an alumnus of Duke University of the Class of 1920.

Lewis Clarence Kerner Scholarship

This scholarship was established in 1959 by Beatrice Kerner Reavis, of Henderson, North Carolina, in memory of her brother, Lewis Clarence Kerner, and designated for the assistance of native or foreign-born students preparing for service in world Christian missions.

The John Haden Lane Memorial Scholarship Fund

This fund was established in 1968 by Mr. Edward H. Lane, Jr. in memory of his brother, Dr. John Haden Lane, and is designated for the benefit of meritorious students pursuing an advanced degree such as the Master of Theology in the field of Pastoral Psychology whose academic training entailed Clinical Pastoral Education.

Laurinburg Christian Education Fund

This fund was established December 11, 1948, by gift through the Methodist College Advance Fund.

Myers Park Scholarship Fund

This fund was established in 1948 by members of the Myers Park United Methodist Church, Charlotte, North Carolina.

W. R. Odell Scholarship

This fund was established in 1946 by the Forest Hills United Methodist Church, Concord, North Carolina.

Jesse M. Ormond Scholarship Fund

In 1948 the North Carolina Conference established a fund in honor of Professor Jesse M. Ormond, who for many years was Director of Field Work and Professor of Practical Theology.

Gilbert T. Rowe Memorial Scholarship Fund

This scholarship fund was established in 1960 through the generosity of Divinity School Alumni and friends of the late Gilbert T. Rowe, Professor of Systematic Theology.

Elbert Russell Scholarship

This scholarship was established in 1942 by the Alumni Association of the Divinity School in honor of Elbert Russell, who served as Dean of the Divinity School and Professor of Biblical Theology.

Hersey E. Spence Scholarship

This scholarship was established in 1947 by the Steele Street Methodist Church of Sanford, North Carolina, in honor of Professor Hersey E. Spence, a former pastor of the congregation.

The United Methodist Church

The United Methodist Church makes a substantial contribution to the Divinity School by designating a certain percentage of its World Service offerings to the Divinity School.

The North Carolina and the Western North Carolina Conferences direct a certain percentage of their College Sustaining Funds to the Divinity School. The South Carolina Conference is a contributor to the Divinity School operational income.

The General Board of Education makes available annually two National United Methodist Scholarships having a cash value of $500 each.

Local United Methodist churches and individuals make contributions to the financial aid program of the Divinity School, thus making it possible to assign students under the Endowment and Field Education Program to urban and out of state churches.

Dempster Graduate Fellowships

The United Methodist Board of Education offers each year the Dempster Graduate Fellowships for graduates of United Methodist Theological Schools, who are engaged in programs of study leading to the degree of Doctor of Philosophy in Religion with a view to teaching in United Methodist colleges and seminaries. Several Divinity School graduates have held these fellowships.

Admission

Requirements and Procedures for Admission

The Divinity School is a fully accredited member of the American Association of Theological Schools, and is one of fourteen accredited seminaries of The United Methodist Church. Candidates for admission must hold the degree of A.B., or its equivalent, based upon four years of work beyond secondary education in a college which is approved by one of the regional accrediting bodies, and their college records must be such as to indicate their ability to carry on graduate professional studies. They will be admitted without examination on presentation of an official, satisfactory transcript of college and all other academic credits which they may have secured. Recommendations from five responsible persons are required. Women will be admitted on the same basis as men.

Applications are evaluated with a view both to the academic achievement of the candidate and with reference to his personal and professional qualifications for the Christian ministry. While an academic average of less than "B minus" is ordinarily regarded as a disqualification for admission, nevertheless, the Committee on Admissions is impressed with a rising curve of achievement in the undergraduate program and makes its decision on the basis of the whole body of credentials of an applicant, including supporting letters of reference.

The applications of students from foreign countries will be considered, each on its own merits, the general principle being that training equivalent

to that of a baccalaureate degree from an accredited American college must have been secured.

In addition to an adequate academic preparation, applicants must satisfy the faculty as to their Christian character and purpose. An application blank may be secured from the office of the Divinity School. Applications received after May 1 cannot be assured of dormitory rooms for the ensuing academic year. *A minimum of thirty days is required to process any application, in many cases longer.*

No admission is final until approved by the Student Health Service, which requires a certificate of immunization and general health to be submitted not earlier than July 1 and not later than September 1.

Entering students are also required to take tests administered by the Bureau of Testing and the Divinity School.

Persons who do not matriculate at the time for which they were originally admitted forfeit admission and must be readmitted. A student who withdraws and desires to return at a later date must file with the Dean a written request for a leave of absence.

Applicants are expected on notification of admission to signify their acceptance within three weeks, and to pay an admission fee of $30.00. (Make check payable to Duke University and send to the Office of the Dean of the Divinity School.) This fee is applied to the regular first-term bill if the student matriculates; if he fails to do so, the fee is forfeited.

Under the terms of the Selective Service Act, pre-enrollment for later admission may be granted to persons who meet the Divinity School standards for admission. Applications for pre-enrollment may be addressed to the Office of the Dean. Pre-enrolled students send transcripts of each year's college work by June 15th of each year in which they are pre-enrolled. Pre-enrollment does not guarantee final admission.

Students should consult this *Bulletin* on Financial Aid and Resources (pages 32 and 34). Applicants may be admitted without eligibility for a tuition grant or scholarship award. Eligibility for either is dependent upon both the applicant's academic standing and his indicated vocational aim. *Due to limited resources, prior consideration is accorded to students purposing ordination and identifiable lay ministries.*

Pre-Seminary Curriculum

The Divinity School of Duke University publishes as its own the policy statement of the American Association of Theological Schools respecting undergraduate preparation for graduate-professional theological studies.

"The student contemplating theological study should correspond at the very earliest opportunity with the school or schools to which he intends to apply and with the authorities of his church in order to learn what will best prepare him for the specific program he expects to enter. He

will be likely to find under the guidance of the seminary that he should consider the following subjects:

English language and literature; history, including non-Western cultures as well as European and American; philosophy, particularly its history and its methods; natural sciences, both the physical and the life sciences; social sciences, where psychology, sociology, and anthropology are particularly appropriate; the fine arts and music, especially for their creative and symbolic values; Biblical and modern languages; religion, both in the Judaeo-Christian and in the Near and Far Eastern traditions.

Some seminaries require Greek or Hebrew for admission, and many advanced biblical courses are offered in the original tongues; modern languages have a less direct but immensely educative role and are required at the graduate studies level.

It is the understanding gained in these fields rather than the total of credits or semester-hours which is significant.

In many seminaries students who have been well prepared in religion and equipped with the tools of theological study will be set free, not to complete their theological course more quickly, but rather to pursue more advanced studies. The principle constantly to be kept in mind is not that of satisfying paper regulations and minimum requirements, but of making the most of opportunities for education."

Transfer of Credit

Under certain conditions transfer of credit from theological schools accredited by the American Association of Theological Schools is provided for by the Divinity School. Applications for transfer of credit will be ruled upon by the Committee on Admissions, and will be subject to evaluation in terms of the prevailing requirements of the Divinity School for graduation. *Ordinarily, credit from another institution will not be granted in amount exceeding one-half of the total credits required by the Divinity School for graduation.* A student applying for transfer of credit in excess of this amount may be required to pass such examinations as the Committee on Admissions may prescribe. In each case a letter of honorable dismissal from the school from which transfer is made is required along with transcript of academic credits.

Advanced Standing

Advanced standing allows entering students to begin work in any given field at a level higher than that of the required curriculum, or to substitute a specialized or cognate course for a required one. See p. 14.

Entering students with substantial undergraduate preparation in areas closely related to required courses of the Divinity School may be eligible for advanced standing. While a student may be eligible for advanced standing in any subject, it is especially pertinent where students offer

undergraduate majors of superior quality in Bible, religion, or philosophy. Students entering with six or more semester hours in the Greek language should consult the *Bulletin* under Language Study for a description of special privileges pertaining to their case. The fields in which entering students, by virtue of previous undergraduate study, are most likely to qualify for advanced standing are: Old Testament, New Testament, and Church History.

An entering student who offers not less than six semester hours of college credit, with a grade of *B* or better in one or more of these areas, may ordinarily anticipate advanced standing in corresponding required courses. All final transcripts will be studied, and advanced standing will be accorded to those who qualify under this provision.

A student who offers not less than three semester hours of college credit with a grade of *B* or better in one or more of these areas may, for satisfactory performance in a qualifying examination in the discipline, be granted advanced standing. Entering students who qualify under this provision must, on notice of admission, make request for the privilege of sitting for such an examination.

Admission on Probation

Applicants for admission who are graduates of non-accredited colleges will be considered on their merits. Ordinarily, such applicants must show that they have attained a superior average for a four-year college course. Admission of such persons will, in every case, be on probation.

Applicants for admission who are graduates of accredited colleges but whose college transcripts do not fully meet Divinity School standards may be admitted on probation if their recommendations otherwise justify admission.

Probation means:

1. Students who during the first year of Divinity School work maintain less than a *C* average, including one or more failures, ordinarily will be required to withdraw from the School.
2. Students admitted on probation may carry only limited schedules of work, the amount to be determined by the Dean of Students.
3. A student admitted on probation ordinarily shall not be admitted for advanced standing.

Students whose work after admission is not satisfactory may be placed on probation.

Ministerial and Professional Qualifications

All students who are admitted to academic study in the Divinity School are subject to the established order of administrative regulations of the

University and the accepted standards of personal conduct it enjoins; continuance in the School is conditioned upon acknowledgment of and compliance with such regulations and standards.

In particular, the University and the Divinity School expect and require students in candidacy for degrees, leading to a ministerial vocation, not only to exemplify the dignity of their calling, but to exhibit attitude and conduct conformable with the recognized standards of their Christian profession. While no honor system relating to academic integrity is formalized within the Divinity School, application for and admission to the courses of study assume the student's assent to full compliance with recognized standards of integrity in the fulfillment of academic tasks.

On this prior understanding, therefore, the University reserves the right, and matriculation by the student is a concession to this right, to compel the withdrawal of any student whose conduct at any time is not satisfactory to the University, even though no specific charge is made against the student.

As a graduate professional school of theology, the Divinity School expects, on the part of the student, an increasing manifestation of maturity and professional purposiveness in discharge of personal and academic responsibilities appropriate to the level of advanced academic work leading to the high and exacting demands of the Christian ministry. Since personal and professional qualifications for the ministry will be considered in evaluating the candidacy of all students for degrees, students whose persons, progress, or development indicate that they are not suited to the work of the ministry will not be allowed to continue in the School.

English Deficiency

Students whose English testing scores show marked deficiency or who are reported by their instructors as deficient in English usage will be required to take Remedial English in addition to meeting other requirements for the Master of Divinity degree.

Faculty Advisers

Each entering student is assigned to a faculty adviser at the time of registration and must report to his adviser. A student must consult with his adviser in order to determine his course and cannot complete his registration without the signature of his adviser. It is understood that all students will continue to consult their advisers at the time of registration throughout the period of their academic work.



Field Education

Its Nature and Purpose. Field Education is conceived to have a two-fold nature. (1) It is a vital part of the total education of the theological student, testing his motivation and fitness for the vocation of the ministry. (2) It is a symbol of a mutual relationship between the seminary and the local church, and it is an effective way of declaring and implementing the purpose of the seminary to serve the church as well as the student.

More specifically it is the purpose of Field Education to: (1) assist the student in understanding the nature and task of the local church; (2) study some of the practical problems involved in the care of the parish; (3) afford an opportunity for the progressive development of the student's knowledge and ministerial skills through responsible participation in the life of the church; (4) contribute leadership to the churches of the region; and (5) provide, in most instances, Field Education Grants to assist the student in defraying educational expenses.

Opportunities for participation in the Field Education program are made available through the cooperative efforts of The Divinity School, churches, pastors, and district superintendents, or equivalent officials of other denominations. The student must make application for the particular program in which he wishes to participate.

Types of Field Education. (1) Summer Assistant Pastors: Upon request of a church, a student is assigned by the Committee on Endowment and Field Education to serve ten weeks as an assistant. The student is provided board, room, laundry, necessary travel, and a Field Education Grant of $1,200.00. To participate, the student must complete the preparatory training sessions under The Duke Endowment Student Association. A majority of the students are assigned to United Methodist

rural charges in the State of North Carolina. A limited number of entering students can be assigned; however, prior consideration is given to rising Middler and Senior students. Students transferring to another seminary are not eligible for assignment the summer prior to transfer.

(2) Winter Assistant Pastors: In consultation with the pastor, church leaders, district superintendents and/or other responsible leaders, students are assigned to serve as assistants during the academic year. The time element will vary from six to sixteen hours per week and the Field Education Grants will vary accordingly up to a maximum of $1,200.00. If more than 16 hours of service per week are required the student will be required to reduce his academic load.

(3) Student Pastors: A student may be appointed by an annual conference or other official agency of a recognized denomination to serve as a student pastor. The student must have the approval of the Director of Field Education, as agent of the Dean, before accepting an appointment as a student pastor. All *new* student pastors must participate in an orientation and training program. All student pastors enroll for not less than seven nor more than ten hours per semester, thus requiring four academic years to complete the M.Div. degree. If the charge being served is located beyond 50 to 55 miles from the campus, the student is required to live in Durham or vicinity during the academic week, Monday 12:00 noon through Friday 4:00 p.m. Salaries and other forms of support are arranged by church officials in keeping with denominational policies and are reported to The Divinity School.

(4) Internships: An expanding program of nine to twelve month internships is currently available at the Divinity School. Academic credit may be given upon the satisfactory completion of a relevant academic study program and periodic reports to the assigned faculty adviser are required. Students who have completed at least two full years of their seminary curriculum are eligible to apply.

(5) Other Church-Related Positions: These consist of teaching church school classes and counseling youth groups, and are expected to require no more than three to six hours per week. These positions may or may not involve Field Education Grants.

Supervision. Through the coordinated efforts of The Divinity School, local churches, district superintendents, and pastors there is continuous supervision of all students participating in the Endowment and Field Education Program. Under the general direction of the Director of Field Education, members of the faculty share in administering this program.

Supervision is carried on through: (1) training sessions required of all students participating in the program; (2) regular visits by faculty members to charges served by student pastors and assistant pastors, followed by student-faculty conferences; (3) seminars for local supervisors; (4) regular reports from all students and charges to the Endowment and Field Education Office.

Programs of Continuing Education

Divinity School Seminars

The Divinity School, with the support of the James A. Gray Fund conducts each year a series of extension seminars consisting of two-day courses for Divinity School alumni and other ministers. During the academic year 1968-69 four seminars were held as follows: Norfolk Virginia, at Virginia Wesleyan College, November 18-19, 1968; Columbia South Carolina, at Main Street United Methodist Church, November 21-22, 1968; Winston-Salem, North Carolina, at Ardmore United Methodist Church, April 14-15, 1969; and Raleigh, North Carolina, at Hayes-Barton United Methodist Church, April 17-18, 1969.

The subject for all four seminars was "The Generation Gap." Panels of college students and ministers participated in the program, along with the following leaders: Dr. Robert L. Browning, Professor of Christian Education, Methodist Theological School in Ohio (Norfolk and Columbia Seminars); Dr. Richard A. Goodling, Professor of Pastoral Psychology Duke Divinity School (Norfolk and Winston-Salem); Dr. Donald S Williamson, Associate Professor of Pastoral Psychology, Duke Divinity School (Columbia and Raleigh); Dr. John L. Maes, Director of the Boston University Counseling Service (Winston-Salem and Raleigh) the Reverend Elmer O. Hall, Assistant Chaplain, Duke University

Norfolk and the North Carolina Seminars); and the Reverend Robert E. Alexander, Associate Methodist Chaplain, University of South Carolina (Columbia Seminar). Dr. McMurry S. Richey, Professor of Theology and Christian Nurture, was Director of the Seminars.

The Henry Harrison Jordan Loan Library

Henry Harrison Jordan, distinguished member of the Western North Carolina Conference (1862-1931) was memorialized by his children in the establishment of an endowment in 1947. The Divinity School librarian is the custodian of books purchased under this fund for loan, through postal services, to qualified ministers of all denominations or localities. The Jordan Loan Library undertakes to maintain a catalogue of up-to-date publications representative of the several theological disciplines and areas of the minister's professional interest. Books are loaned on application to the librarian of the Divinity School from a catalogue supplied on request.

Divinity School Summer Clinics

Five clinics, running concurrently, for ministers of all denominations will be conducted at The Duke Divinity School, August 4-15. These are designed to supplement seminary education through two weeks of intensive training in one selected subject. No academic credit is given. Participants are expected to attend the full two weeks from the opening dinner to the closing luncheon.

Clinics for the summer of 1969 are: Campus Ministry, Church Planning and Development, Pastoral Care, Preaching, and an additional clinic on one of the theological disciplines, the exact content of which will be decided upon the consideration and need of available personnel.

Cost. Registration Fee $10.00 Tuition $50.00
Room, double per week $8.75—Room, single per week $11.00
Linen, upon request, $3.75 per week.
Meals, Cafeteria

Sponsoring instutions make available funds for tuition. Other scholarships available upon request.

For full information: Write to The Director, Summer Clinics, Duke Divinity School, Durham, North Carolina 27706.

The Course of Study School

In cooperation with the Department of Ministry of the Board of Education and the Southeastern Jurisdictional Conference of The United

Methodist Church, Professor O. Kelly Ingram directs for the Divinity School a Course of Study School for pastors of The United Methodist Church. This school is in session for approximately four weeks each summer, and the required studies for one full year can be completed in this period. This is not a part of the regular work of the Divinity School and no credit toward a seminary degree can be earned. The faculty includes representatives from the Divinity School and other church-related institutions. The twenty-first session of the Course of Study School is scheduled for July 8-August 1, 1969.

Other Programs

Facilities for Advanced Study in the American Schools of Oriental Research

The Divinity School of Duke University is one of the supporting members of the American Schools of Oriental Research. Accordingly, students in the Divinity School have the privilege of attending the American School in Jerusalem or the one in Bagdad without charge for tuition. They may also compete for the financial aids which are offered annually by these Schools, which consist of four fellowships, the stipends depending upon available funds.

Programs in Pastoral Psychology

Programs in Pastoral Psychology beyond the studies incorporated in the M.Div. curriculum are provided in cooperation with the Duke University Medical Center. Five such special programs are available:

1. The Master of Theology degree with a major in Pastoral Psychology is ordinarily a calendar year program beginning the first full week in June. However, upon the recommendation of the staff, candidates with a quarter or more of clinical training may begin their program in September. Majors choose between a program which emphasizes Clinical Pastoral Education in the institutional setting and one which emphasizes Pastoral Care and Counseling under supervision in the parish setting. The CPE program provides certified training through the Association for Clinical Pastoral Education; the Pastoral Care and Counseling program provides supervised training toward certification by the American Association of Pastoral Counselors. In either case, a quarter of clinical training (PP 227A or its equivalent) is considered a prerequisite. Candidates who emphasize CPE in the institutional setting receive four quarters of clinical training credit if their program extends over the calendar year.

2. A summer quarter of CPE is available beginning the first full week in June for qualified M.Div. candidates.
3. A summer quarter of Parish Clinical Education is available to students enrolled in The Divinity School serving in churches under the Rural Church Program of the Duke Endowment.
4. A one-year certificate or non-degree internship program in CPE is available through the Duke Medical Center for those who hold the M.Div. or equivalent degree. These trainees may enroll in The Divinity School as Special Students for a course or two each semester. Such training provides four quarters CPE credit.
5. A two-week clinic in Pastoral Care is provided each summer as part of The Divinity School's continuing education program for men with the M.Div or equivalent degree.

For further information concerning any of these programs, write to Dr. Richard A. Goodling, Director, Programs in Pastoral Psychology, The Divinity School. See Master of Theology degree program, p. 20.



Resources for Study

Library Resources

Divinity School Library

The Divinity School Library, containing a collection of more than 140,000 volumes in the field of religion and closely related disciplines affords an unusual wealth of material for the seminary student. Although it is an integral part of the University's nine-unit library system which possesses more than 2,000,000, the Divinity School Library has its own separate facilities in the Divinity School building. Its book collection is operated on the open stack system, and its reading room provides study facilities for students, housing space for the special reference collection in religion, and for the current numbers of the more than 500 religious periodicals to which the Library subscribes.

Staffed by a librarian and a reference librarian who are trained in theology as well as in library administration, and by a circulation staff of two persons aided by a number of student assistants, the Divinity School Library offers a variety of reference services to assist the student in selecting and locating materials. The staff, in cooperation with the faculty, maintains a book and periodical collection to support both basic courses and advanced research in all major fields of religious studies.

The Divinity School Library is adjacent to the Perkins Library thus affording easy access to its many departments. The seminary student is

permitted to withdraw books from the collection of more than 1,250,000 volumes in the Perkins Library, and to make use of its other resources and facilities which include manuscripts, archives, public documents, newspapers, periodicals, microfilm, maps, rare materials (among which are forty-six prized ancient Greek manuscripts), reference assistance, and provision for the borrowing of books not in the Duke Libraries from the Library of the University of North Carolina and other institutions.

Ormond Memorial Fund

Established in 1924 by Dr. J. M. Ormond, '02, and Mrs. Ormond, in memory of his mother and father, Mr. and Mrs. J. J. Ormond, the income from the Ormond Memorial Fund is to be used for the purchase of a collection of books on the rural church for the Library of the Divinity School at Duke University.

Avera Bible Fund

Established in 1895 by gift of Mrs. L. B. McCullers in memory of her husband, Willis H. Avera, the fund provides for the purchase of books to be used for the Divinity School Library.

Louis W. Bailey Memorial Fund

This memorial fund was established in 1958 by the Reverend A. Purnell Bailey in memory of his father. The income is to be used for books for the Divinity School Library.

The William Arthur Kale, Jr. Memorial Fund

William Arthur Kale, Jr. was a member of the Duke University class of 1958, a lover of sacred art and music, and a member of the University Chapel Choir. In his memory, there was established in 1964, by the provision of his parents, Professor and Mrs. William Arthur Kale, Sr., a fund for the purchase of books and other materials in the area of fine arts and religious musicology for the perpetual enrichment of the holdings of the Divinity School Library.

Corporate Worship

One of the most important aspects of a program of training for Christian service is warm and discriminating common prayer.

The center of corporate life of the Divinity School has been its own place of worship, York Chapel. Due to current construction for renova-

tion of library facilities, Divinity School worship is conducted in the great Chapel of the University. Regular chapel services are held, at which all students are expected to be present. Services are led by members of the faculty, by visiting ministers, and by members of the student body. Each spring, the Worship Committee invites a Duke alumnus to return to the Divinity School for a week to share, through Chapel sermons and seminar discussions, his experience of the challenges and possibilities of the parish ministry.

Public Lectures

The Committee on Lectures and Public Events presented or sponsored the following lectures during the year 1968-1969:

Professor Philip H. Ashby, Princeton University; Professor Robert L. Browning, Methodist Theological School in Ohio; Professor George Kilpatrick, Queens College, Oxford University; Professor Jürgen Moltmann, Tübingen University; Professor Roland de Vaux, Ecole Beblique et Archéologique Francaise.

Lectures and Symposia

The James A. Gray Lectureship

The James A. Gray Lectures were established in 1950 as part of the fund set up in 1947 by Mr. James A. Gray of Winston-Salem, North Carolina. This lectureship was once again delivered in connection with the Divinity School Convocation and Pastors' School, held at the University October 28-30, 1968. The lecturer was Dr. Samuel Sandmel, Distinguished Service Professor of Bible and Hellenistic Literature, Hebrew Union College-Jewish Institute of Religion, Cincinnati. His subject was "The Several Israels."

The Divinity School Library Lectureship

In 1948 the Duke Divinity School Library Lectureship was established by the Reverend George B. Ehlhardt for the purpose of bringing to the Divinity School a succession of religious leaders.

Franklin Simpson Hickman Lectureship

The Franklin Simpson Hickman Lectureship was established in July 1966 by Veva Castell Hickman, the widow of Dr. Franklin Simpson Hickman. The first Hickman lecture was delivered by Dr. Roy Nichols,

Resident Bishop of the Pittsburgh Area of the United Methodist Church, at the time of the 1968 Convocation and Pastors' School.

Symposium of Christian Missions

Each year, in collaboration with the United Methodist Board of Missions, the Divinity School presents a team of distinguished participants in the world mission of the Church, usually including a secretary of missionary personnel and a Duke alumnus serving overseas. The general aims are "to inform students and faculty of the philosophy and work of missions as seen through the personal experience of speakers; to educate present and future ministers so that they will have a vital concern for the promotion of missionary education in the local church; and to evaluate the missionary enterprise as a significant force in the revolutionary world." The featured speaker in 1969 was The Reverend Doctor Grant Shockley, Secretary for Christian Education in the World Division of the United Methodist Board of Missions. He spoke on "The Church Amid World Revolution."





Courses of Instruction*

Required courses are numbered from 9 to 70. Elective courses carrying credit in the Divinity School only are numbered from 71 to 199. Courses approved for credit in both the Divinity School and the Graduate School are numbered above 200. Lists of courses to be offered in any semester will be available at the time of each registration.

Junior Seminars, Colloquia, and English Bible

9. *Church and Ministry.* 2 s.h. *Staff*
10. *Person and Society.* 2 s.h. *Staff*
Junior Colloquia, I and II. No credit. *Staff*

I. Biblical Studies

Old Testament

11. *Introduction to Old Testament Interpretation.* 4 hours. *Tucker*
12. *Introduction to the Old Testament.* 3 s.h. *Efird or Stinespring*

* On approval of the Dean, courses offered in the Graduate School other than those approved for credit in the Divinity School may be approved for credit in individual cases, provided no equivalent course is offered in the Divinity School; each case to be decided on its merits.

101. *Post-Exilic Prophecy.* 2 s.h. *Stinespring*

106. *Exegesis of the English Old Testament.* Prerequisite: O.T. 11 c the equivalent. 3 s.h. *Staff*

109. *The Religion of the Old Testament.* 3 hours. *Efird*

196. *The Bible and Recent Discoveries.* 2 s.h. *Stinespring*

201-202. *First Hebrew.* One year of Greek prerequisite. 6 s.h. *Stine spring*

207. *Second Hebrew.* 3 s.h. *Staff*

208. *Second Hebrew.* 3 s.h. *Staff*

209. *Old Testament Theology.* Prerequisite O.T. 11-12 or equivalen 3 s.h. *Tucker*

302. *Studies in the Intertestamental Literature.* Prerequisite: permi sion of the instructor. 3 s.h.

304. *Aramaic.* 3 s.h. *Stinespring*

305. *Third Hebrew.* 3 s.h. *Davies or Stinespring* (Not offered i 1969-70.)

306. *Language and Literature of the Dead Sea Scrolls.* Prerequisite a knowledge of Hebrew. 3 s.h. *Wintermute*

307. *Syriac.* Some knowledge of Hebrew and Aramaic prerequisit 3 s.h. *Stinespring*

309. *History of the Ancient Near East.* 3 s.h. *Tucker*

310. *Old Testament Prophecy.* Prerequisites: O.T. 11 or equivalen 3 s.h. *Stinespring or Tucker*

350-351. *Seminar in Old Testament.* 3 s.h. *Staff*

**History of Art 215. Religious Art of the Ancient Near East.* 3 s.h *Markman*

**History of Art 216. Religious Art of the Classical World.* 3 s.h. *Mark man*

New Testament

18. *Introduction to New Testament Interpretation.* 4 hours. *Efird c M. Smith*

19. *Introduction to New Testament Theology.* Prerequisite: N.T. 1 3 s.h. *M. Smith* (Not offered in 1969-70.)

103-104. *Hellenistic Greek.* 6 s.h. (Two sections) *Staff*

105. *Studies in Paul.* 3 s.h. *Efird* (Not offered in 1969-70.)

107. *The Church in the New Testament.* Prerequisite: N.T. 18 c equivalent. 3 s.h. *M. Smith* (Not offered in 1969-70.)

116. *Exegesis of the English New Testament I.* 3 s.h. *Staff*

117. *Exegesis of the English New Testament II.* 3 s.h. *Staff*

118. *The New Testament in Greek.* 3 s.h. *Staff*

119. *The New Testament in Greek.* 3 s.h. *Staff*

* Course offered in the Graduate School which is credited toward the degree c Master of Divinity.

225. *Living Issues in New Testament Theology.* Prerequisite: 6 s.h. of N.T. or the equivalent. 3 s.h. *M. Smith*

226. *Exegesis of the Greek New Testament I.* Prerequisite: N.T. 103-104. 3 s.h. *M. Smith or Young*

227. *Exegesis of the Greek New Testament II.* Prerequisite: N.T. 103-104. 3 s.h. *M. Smith or Young* (Not offered in 1969-70.)

258. *Coptic.* Prerequisite: at least one year of Greek. 3 s.h. *Wintermute*

312. *Pauline Theology.* 3 s.h. *Davies* (Not offered in 1969-70.)

314. *Judaism and Christianity in the New Testament.* 3 s.h. *Davies*

319. *The Gospel According to St. Matthew in Recent Research.* 3 s.h. *Davies*

340-341. *Seminar in the New Testament.* 3 s.h. *M. Smith*

345. *The Epistle to the Hebrews in Recent Research.* 3 s.h. *Davies* (Not offered in 1969-70.)

**Greek 257.* 3 s.h.

**Latin 258.* 3 s.h.

II. Historical Studies

Church History

13. *History of Christianity I.* 4 s.h. *Petry and Hillerbrand*

14. *History of Christianity II.* 4 s.h. *Hillerbrand and Henry*

85. *Seminar in Modern European Christianity.* Prerequisite: C.H. 13-14. 2 s.h. *Hillerbrand* (Not offered in 1969-70.)

137. *Religious Leaders in Christian History.* Prerequisite: C.H. 13. 3 s.h. *Petry*

138. *Great Books in Christian History.* 3 s.h. *Petry* (Not to be offered in 1969-70.)

139. *Methodism.* Prerequisite: C.H. 13. 2 s.h. *Petry*

140. *The Rise of Methodism and the Anglican Background.* 3 s.h. *Baker or Rogers*

(Students are advised that either C.H. 139 or C.H. 140 will satisfy the United Methodist Discipline Requirement No. 344.)

142. *British Methodism after Wesley.* 3 s.h. *Baker* (Not offered in 1969-70.)

187. *Pre-Reformation Preaching.*

250. *The Reformation of the 16th Century.* 3 s.h. *Hillerbrand*

251. *The Age of Counter-Reformation.* 3 s.h. *Hillerbrand*

252. *Pietism, Deism, Rationalism.* 3 s.h. *Hillerbrand*

* Course offered in the Graduate School which is credited toward the degree of Master of Divinity.

253. *History of Modern Catholicism.* 3 s.h. *Hillerbrand* (Not offered in 1969-70.)

329. *The English Church in the Eighteenth Century.* 3 s.h. *Baker*

330. *The Church in Europe Since 1800.* 3 s.h. *Petry* (Not to be offered in 1969-70.)

331. *The Social Message of the Early and Medieval Church.* Prerequisite: C.H. 13. 3 s.h. *Petry*

332. *The Medieval Church.* Prerequisite: C.H. 13. 3 s.h. *Petry* (Not to be offered in 1969-70.)

334. *Church Reformers and Christian Unity.* Prerequisite: C.H. 13. 3 s.h. *Petry* (Not to be offered in 1969-70.)

336. *Christian Mysticism in the Middle Ages.* Prerequisite: C.H. 13. 3 s.h. *Petry*

Historical Theology

21. *The Theology of the Protestant Reformation.* 3 s.h. *Grislis*

111. *Literature of the Latin Church.* Prerequisite: Permission of instructor. 3 s.h.

120. *Faith and Heresy in the Early Church.* 3 s.h. *Grislis* (Not offered in 1969-70.)

121. *Sacraments in the Christian Church.* 3 s.h. *Grislis* (Not offered in 1969-70.)

123. *The Theology of the Early Church.* 3 s.h. *Grislis*

234. *The Theology of St. Thomas Aquinas.* 3 s.h. *Grislis*

240. *The Theology of Richard Hooker.* 3 s.h. *Grislis* (Not offered in 1969-70.)

260. *Life and Thought of the Wesleys.* Permission of instructor. 3 s.h. *Baker*

261. *The Theology of John Wesley.* 2 s.h. *Richey* (Not offered in 1969-70.)

308. *Greek Patristic Texts.* Prerequisite: reading knowledge of classical or N.T. Greek and C.H. 13. 3 s.h. *Young*

337. *The Theology of Martin Luther.* 2 s.h. *Hillerbrand* (Not offered in 1969-70.)

338. *The Theology of John Calvin.* 3 s.h. *Grislis* (Not offered in 1969-70.)

362. *The Theology of St. Augustine.* 3 s.h. *Grislis*

American Christianity

28. *History of American Christianity.* 3 s.h. *Henry*

129. *The Theology of American Methodism.* 3 s.h. *Rogers*

199. *The American Social Gospel.* 3 s.h. *Henry*

296. *Religion on the American Frontier.* Prerequisite: A.C. 28. 3 s.h. *Henry*
385. *Religion in American Literature.* 3 s.h. *Henry*
395. *Christian Thought in Colonial America.* 3 s.h. *Henry*
396. *Liberal Traditions in American Theology.* 3 s.h. *Henry*
397. *Contemporary American Theology.* 3 s.h. *Henry*

History of Religions

158. *Contemporary Non-Christian Religions.* 3 s.h. *Sullivan or Ricketts*
180. *Religions of the Near East.* 3 s.h. *Partin*
182. *Religions of India.* 3 s.h. *Sullivan*
280. *The History of Religions.* Permission of instructor. 3 s.h. *Partin or Sullivan*

III. Theological Studies

Christian Theology

20. *Types of Religious Philosophy.* 3 s.h. *Robinson*
32. *Introduction to Christian Theology.* 4 s.h. *Cushman and Herzog*
102. *Christian Apologetics and Modern World Views.* 3 s.h. *Robinson*
108. *Major Trends in Contemporary Theology.* 3 s.h. *Herzog*
110. *This Life and the Age to Come.* 3 s.h. *Robinson*
125. *Theological and Psychological Interpretations of Man.* 3 s.h. (Not offered in 1969-70.) *Richey*
127. *Contemporary Understandings of Man.* 3 s.h. (Not offered in 1969-70.) *Richey*
200. *The Person and Work of Christ.* Prerequisite: C.T. 32. 3 s.h. *Cushman or Hall*
213. *The Structure of Roman Catholic Thought.* Prerequisites: C.H. 13 and 14 or H.T. 21. 2 s.h. *Herzog*
216. *Kierkegaard Studies.* 3 s.h. *Robinson*
224. *Conceptions of Man in Western Thought.* 3 s.h. *Richey* (Not offered in 1969-70.)
300. *Systematic Theology.* Prerequisite: C.T. 32 or equivalent. 3 s.h. *Herzog*
303. *The New Hermeneutic and the Concept of History.* Prerequisite: C.T. 32. 3 s.h. *Herzog*
320. *Hegel and Schleiermacher.* 3 s.h. *Herzog*
322. *Nineteenth-Century European Theology.* 3 s.h. *Herzog*
325. *Philosophical Theology I.* Prerequisite: Permission of instructor. 3 s.h. *Robinson* (Not offered in 1969-70.)

326. *Philosophical Theology II.* Prerequisite: C.T. 325 or permission of instructor. 3 s.h. *Robinson* (Not offered in 1969-70.)

328. *Twentieth-Century European Theology.* Prerequisite: C.T. 32 and permission of the instructor. 3 s.h. *Herzog*

372. *Theology of Paul Tillich.* 3 s.h. *Robinson* (Not offered in 1969-70.)

Christianity and Culture

16. *Contemporary Western Culture.* 3 s.h. *Poteat*

230. *The Meaning of Religious Language.* Prerequisite: C.T. 32 or permission of instructor. 3 s.h. *Poteat*

380. *Existentialist Thought.* Prerequisite: C.T. 32 or permission of instructor. 3 s.h. *Poteat*

Christian Ethics

27. *Christian Ethics.* 3 s.h. *Beach and H. Smith*

114. *Christian Social Ethics.* 3 s.h. *Smith*

115. *Christian Social Action in the Local Church.* 2 s.h. *Smith*

122. *Moral Theology in the Nineteenth Century.* 3 s.h. *Smith*

124. *Moral Theology in the Twentieth Century.* 3 s.h. *Smith*

175. *Special Problems in Christian Ethics.* 3 s.h. *H. Smith and Others*

194. *The Protestant Church and American Culture.* 3 s.h. *H. Smith*

292. *Christian Ethics and International Relations.* 3 s.h. *Lacy*

389. *Christian Ethics and Contemporary Culture.* Prerequisite: C.E 27 or its equivalent. 3 s.h. *Beach*

390. *Current Problems in Christian Ethical Theory.* Prerequisite Ch.E. 27 or its equivalent. 3 s.h. (Not offered in 1969-70.) *Beach*

391. *Historical Types of Christian Ethics I.* Prerequisite: Ch.E. 27 or its equivalent. 3 s.h. *Beach*

392. *Historical Types of Christian Ethics II.* 3 s.h. *Beach*

394. *Christianity and the State.* Prerequisite: Ch.E. 27. 3 s.h. (Not offered in 1969-70.) *Beach*

World Christianity and Ecumenics

24. *The Christian World Mission.* 3 s.h. *Lacy*

133. *The Expansion of Christianity.* 3 s.h. *Lacy* (Not offered in 1969-70.)

135. *Area Studies of the Christian Church.* 2 s.h. *Lacy and Others* (Not offered in 1969-70.)

156. *The Ecumenical Movement.* 3 s.h. *Lacy*

190. *The Christian Critique of Communism.* 3 s.h. *Lacy*

333. *Seminar: Marxist Ideology and Christian Faith.* Prerequisite: Ch.E. 190 or equivalent. 3 s.h. *Lacy* (Not offered in 1969-70.)
386. *Seminar: Christianity in Dialogue with Other Faiths.* 3 s.h. *Lacy* (Not offered in 1969-70.)

IV. Ministerial Studies

The Care of the Parish

146. *Church Building.* 2 s.h. *Nesbitt*
148. *Christian Stewardship and Church Finance.* 2 s.h. *Ingram* (Not offered in 1969-70.)
150. *Church and Community.* 2 s.h. *Schores*
151. *The Town and Country Church.* 2 s.h. *Nesbitt*
152. *Evangelism and the Local Church.* 2 s.h. *Kale and Ingram* (Not offered in 1969-70.)
153. *Comparative Polity and Ecumenics.* 3 s.h. (Not offered in 1969-70.) *Ingram*
154. *The Urban Church.* 2 s.h. (Not offered in 1969-70.) *Ingram*
155. A, B, C, D. *Church Organization and Administration.*
A. *The United Methodist Church.* 2 or 3 s.h. *Ingram*
B. *The Baptist Churches.* 2 or 3 s.h. *Ingram and Others*
C. *The United Church of Christ.* 2 or 3 s.h. *Ingram and Others*
D. *The Presbyterian Churches.* 2 or 3 s.h. *Ingram and Others*
160. *Church Administration.* 3 s.h. *Ingram*

Christian Education

22. *Faith and Nurture.* 3 s.h. *Richey* (Not offered in 1969-70.)
25. *The Church and Christian Nurture.* 3 s.h. *Kale*
149. *The Ministry to the Campus.* 3 s.h. *Staff*
161. *Teaching Methods.* Required for candidates for the M.R.E. degree. 3 s.h. *Kale*
162. *Curriculum Building in the Local Church.* 3 s.h. *Kale*
164. *Christian Education of Children.* 2 s.h. *Kale*
165. *Christian Education of Youth.* 2 s.h. *Kale*
166. *Christian Education of Adults.* 2 s.h. *Kale*
167. *Theology and the Laity.* 3 s.h. *Richey* (Not offered in 1969-70.)
169. *Major Issues in Christian Education.* 3 s.h. *Richey* (Not offered in 1969-70.)
M.R.E. Thesis or Project. Required of all candidates for the Master of Religious Education degree. 3 s.h. *Kale and Others*

Pastoral Psychology

170. *Pastoral Conversation.* 3 s.h. *Goodling*

171. *Pastoral Counseling.* Prerequisite: P.P. 177. 3 s.h. *Williamson*

172. *Pastoral Care in Marriage and Family Life.* 2 s.h. *Goodling* (Not offered in 1969-70.)

174. *Religion and Personality Processes.* Prerequisite: P.P. 170. 3 s.h. *Goodling or Williamson*

175. *Special Practicum Projects. Goodling or Williamson*

176. A, B, C, *Pastoral Care and Persons in Institutions.* 3 s.h. each *Staff*

177. *Pastoral Care in the General Hospital Setting.* Prerequisite: P.P. 170. 3 s.h. *Staff*

178. *The Psychodynamics of the Community Life of the Local Church.* Admission by consent of the instructor. 2 s.h. *Williamson*

271. *Advanced Counseling: Marriage and Family.* (For Th.M. candidates.) 2 s.h. *Williamson*

274. *Research Problems in Pastoral Psychology.* 2 s.h. *Goodling*

275. *Individual Study in Pastoral Psychology.* 2 s.h. *Staff*

276. A, B, C. *Clinical Pastoral Education I:*

A: Summer Quarter of CPE. 4 s.h. (Not offered in 1969-70.)

B: Fall Semester of CPE. 4 s.h. (Not offered in 1969-70.)

C: Spring Semester of CPE. 4 s.h. (Not offered in 1969-70.)

277. A, B, C. *Clinical Pastoral Education II:* CPE in the General Hospital Setting.

A: Summer Quarter of CPE. 4 s.h.

B: Fall Semester of CPE. 4 s.h.

C: Spring Semester of CPE. 4 s.h.

278. *Psychological Theories of Personality.* 2 s.h. *Williamson*

279. *The Caring Ministry of the Laity Through Personal Groups.* 2 s.h *Williamson*

281. A, B. *Pastoral Counseling Practicum.* Admission by permission of instructor. 4 s.h. *Goodling and Williamson*

The Church at Worship

34. *Workshop in Communication.* 1 s.h. *Rudin*

Preaching

30. *Theory and Practice of Preaching.* 3 s.h. *Hall*

181. *Advanced Sermon Analysis Seminar.* 3 s.h. *Hall*

185. *Preaching Values in Non-Biblical Sources.* 3 s.h. *Hall and Staff*

187. *Pre-Reformation Preaching.* Prerequisite: C.H. 13. 3 s.h. *Petry*

193. *Theology and Preaching.* 3 s.h. *Hall*

Worship and Church Music

134. *Liturgical Reading.* 2 s.h. *Rudin*
141. *The Classic Age of the English Hymn.* 2 s.h. *Baker*
178. *Corporate Worship.* 3 s.h. *Rudin*
180. *Church Music.* 3 s.h. *Hanks*
Chapel Choir. Hanks

Field Education, Clinical Training, and Internships

Field Education

Each project involves the quality of preparation and participation commensurate with one semester hour of academic credit. Participation in any project must have the approval of the supervising professor and the Field Education Office before work is begun. Registration for projects must be at the time of normal Divinity School registration, though work on the project may extend over varying lengths of time. A student may receive credit for a maximum of three projects during his seminary career. Projects in other areas may be proposed by professors or students for consideration by the Field Education and Curriculum Committees.

195 A, B, C, D, E, F. *Field Education Projects.*
A. *Pastoral Psychology Practicum.* 1 s.h. *Staff*
B. *Community Studies.* 1 s.h. *Staff*
C. *Leadership Training.* 1 s.h. *Kale and Staff*
D. *Christian Education Laboratory.* 1 s.h. *Kale and Staff*
E. *Research in Experimental Ministries.* 1 s.h. *Ingram and Staff*
F. *Community Center Practicum.* 1 s.h. *H. Smith and Staff*

Clinical Training in Pastoral Psychology

1. Clinical credit may be allowed to students for a quarter (10 or 12 weeks) of training in programs accredited by the Association for Clinical Pastoral Education (ACPE).

2. Credit for clinical training in programs not accredited by ACPE will be on an individual basis only upon the recommendation of the Director of Studies in Pastoral Care and approval of the Dean.

3. Students involved in clinical training under the direct supervision of members of the Pastoral Psychology staff shall register for credit under PP 277A for 4 semester hours of credit.

4. Students involved in clinical training in other programs shall register with the ACPE and upon receipt of a supervisor's report at the end of the training period will receive 4 s.h. of transfer credit.

5. Grades for clinical training are to be reported as either *P* or *F*.

Interseminary Church and Society Internships

The Interseminary Church and Society Program is an experiment in the theological education of students, professors, and leaders in some of the major institutions of our time. Sponsored jointly by Duke Divinity School, Union Theological Seminary in Virginia, and Virginia Theological Seminary, the Program currently permits students to enroll for an academic year in residence at one of the participating schools and to undertake work and study in business and industry, government and politics, or science and technology. Major features of the program include specific job placement, professional and academic supervision, and regular seminars and colloquia. For further information concerning this Program, consult the Registrar.

Ch.E. 131-132. *Interseminary Intern Seminar.* 6 s.h. *H. Smith and Others*

Campus Ministry Internships

143-144. *Campus Ministry Internship.* Prerequisite: C.Ed. 149. 3 s.h. each semester. *Staff*

The School of Engineering

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The Profession of Engineering

Throughout history engineering has continually interacted with the rest of human society in a highly determinative way. Its influence is evident in the very fabric of our culture. Engineering has provided the means for feeding, clothing, and sheltering mankind. It has largely freed man from physical drudgery and from the slavery of routine mental effort. It has provided the tools of new scientific discovery, as well as those of new art forms. It has provided the means of bringing to mankind everywhere the results of the creative efforts of the great artists, writers, scientists, and philosophers of both ancient and modern times. It has placed man in close contact with his fellowmen throughout the world, and is now concerned with placing man on the moon. The engineer achieves imaginative new solutions to many of the very real problems that confront mankind.

No simple formal definition suffices to portray the multifaceted activity which is engineering. A partial picture is afforded by the statement that "engineering is the profession in which knowledge of mathematics and the physical sciences is applied to develop ways of utilizing economically the materials and forces of nature for the well-being of mankind." The engineer fully utilizes scientific principles and concepts. However, the modern practice of engineering is interdisciplinary, and the engineer must be both scientist and artist, both theoretician and pragmatist, both analyst and synthesist. In the words of the late Theodore von Kraman: "The scientist explores what is; the engineer creates what has never been." The modern engineer has the need to be broad as well as deep in his knowledge and interests, and his education must reflect this need.

General Information

Engineering at Duke University

Duke University, a privately supported institution of higher education in Durham, North Carolina, has about 8,000 students enrolled in nine divisions: Trinity College and The Woman's College (undergraduate liberal arts colleges for men and women), the Graduate School and the professional schools—Divinity School, School of Engineering, School of Forestry, School of Law, School of Medicine, and School of Nursing. Annually, student enrollments represent nearly every state and approximately sixty-five foreign countries. The University is a member of the Southern Association of Colleges and Schools and of the Association of American Universities. The University also holds institutional membership in relevant professional societies, including the Engineering College Administrative Council and the Engineering College Research Council.

As part of the University community, students in the engineering programs share in a total educational experience that only a major university can provide. The School of Engineering shares the same campus with Trinity College, the Graduate School, the Divinity School and the Schools of Forestry, Law, Medicine.

History

The School of Engineering of Duke University offers programs of instruction and research at all three degree levels: Bachelor's, Master's, and Doctor's. The School traces its origin to 1851, when the catalogue of Normal College, the forerunner of Trinity College and Duke University, advertised a "Classical" course which included surveying in the sophomore year and architecture and engineering for seniors. Similar offerings characterized instruction in engineering throughout the seventy-three-year period of the institution's operation as Trinity College.

With the change of name to Duke University in 1924 and the concomitant rapid evolution of the institution to its present status as a major university, the program in engineering entered a period of vigorous development which is still under way. Separate departments were established for civil engineering and electrical engineering in 1927, and for mechanical engineering in 1931. In 1937 these three departments were administratively grouped to form the Division of Engineering, which in 1939 was incorporated into the University structure as the College of Engineering, one of three coordinate undergraduate colleges of Duke University. Through the Graduate School, the College began offering work leading to the Master of Science degree in 1957, and to the Doctor of Philosophy degree in 1960. In September, 1966, the name of the College was changed to School of Engineering in recognition of its professional status and of the stature that it had achieved in its program of graduate study and research.

Both on the campus and in the classroom the emphasis is on the individual. To this end classes are kept small and close contact is maintained between professor and student. As a matter of policy, the School is relatively small, with an undergraduate enrollment of about 500. Master's and doctor's work in engineering is offered through the Graduate School.

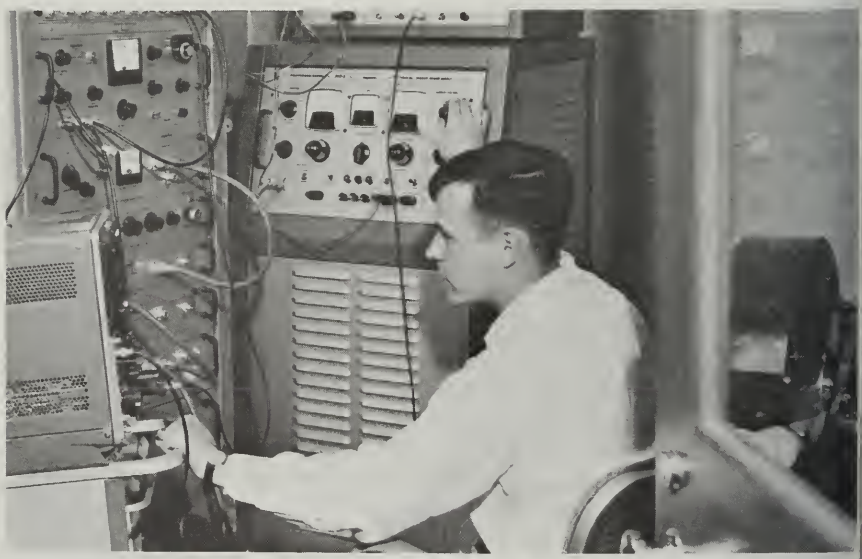
Organization

The affairs of the School of Engineering are administered by the Dean of the School, with the assistance of the Engineering Administrative Council which includes the Associate Dean, the chairmen of the three departments of engineering, and the research coordinator. The affairs of each department of engineering are administered by the chairman of that department, with the assistance of the department faculty. Much of the administrative work of the School is carried out with the assistance of faculty committees.

The graduate programs are administered by the respective engineering departments in coordination with the Graduate School.

The legislative body of the School of Engineering is its faculty which is composed of the President, the Provost, the Secretary, and all members of the university faculty in the School of Engineering. The membership of the engineering faculty also includes the Director of Undergraduate Admissions for the School of Engineering and four members from Arts and Sciences who are elected annually by the faculty of the School of Engineering, one from mathematics, one from the natural sciences, and one each from two of the following three areas: humanities, social sciences, and history. The engineering faculty has responsibility for the curriculum and for determining policies in those academic matters that pertain exclusively to the School and subject to the regulations of the university faculty and its recognized legislative bodies.

The Engineering Faculty Council is composed of two representatives of each of the departments of the School of Engineering. One of the representatives of each department is elected by the members of the faculty in that department from their own group, and one is elected from each department by vote of the entire faculty of the School of Engineering. The Dean of the School of Engineering is a member ex-officio. The EFC elects its own chairman and secretary, the latter serving also as secretary to the faculty of the School. The Council functions as a steering committee for the faculty: its responsibilities include the preparation of agendas for meetings of the faculty, and service as the Committee on Faculty Committees.

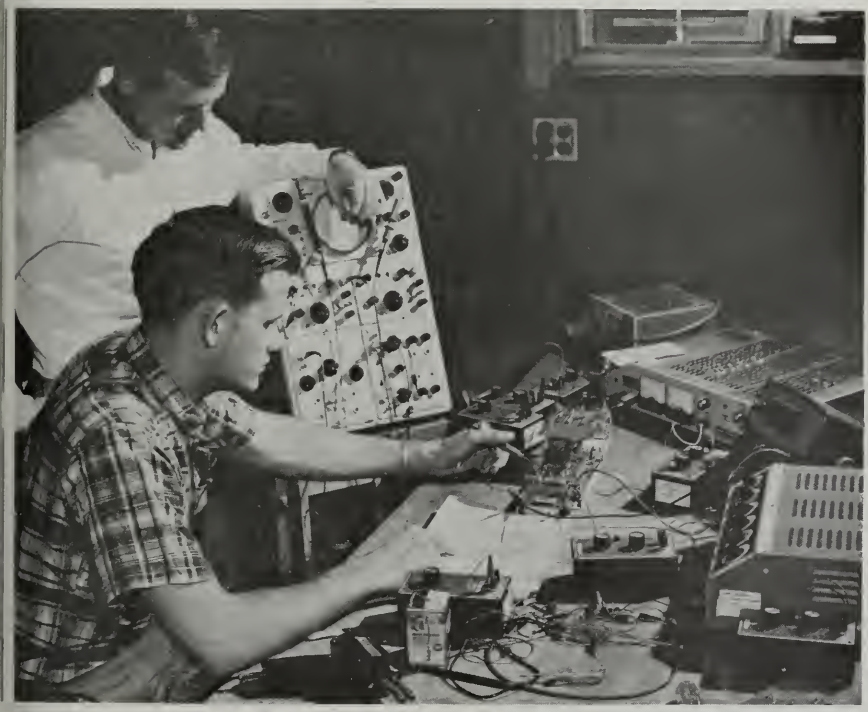


Instrumented study of magnetic properties of materials in the Ferromagnetics Laboratory

Physical Plant

The entire School is in a single building on the West Campus. It was first occupied in January 1948. Each of three wings houses the instructional and research laboratories and the special classrooms of one of the three engineering departments. The building also has offices, classrooms, and other general facilities including a library of some 39,000 volumes and 500 periodicals; an auditorium where audio-visual instruction can be given to large groups; conference rooms and seminar rooms; a student lounge; design rooms; facilities for reproducing copy of various types; a central precision shop; and central, as well as departmental computation facilities. The central computation facilities include a console with direct access to the large-scale IBM Model 360/75 computer jointly operated by Duke University and the two nearby state university units.

Rapid evolution of the program of graduate study and research, and the accompanying growth of the faculty and staff, have made increasing demands on the physical plant. Accordingly, plans are under study for the enlargement of physical facilities for the school.



Development of electrical power conditioning systems for spacecraft

Programs of Study and Requirements for Degrees

The School offers fully-accredited engineering curricula. The degree of Bachelor of Science in Engineering (B.S.E.) is offered with majors in civil, electrical, or mechanical engineering and in selected interdisciplinary areas. Through the Graduate School it also provides work leading to the degree of Master of Science (M.S.) and to the degree of Doctor of Philosophy (Ph.D.) in civil, electrical or mechanical engineering.

Undergraduate Degree Offered

Bachelor of Science in Engineering

The School offers a four-year program leading to the degree of Bachelor of Science in Engineering (B.S.E.), with opportunity for majors in the professional fields of civil, electrical, mechanical, or biomedical engineering, as well as for programs in selected interdisciplinary fields such as engineering mechanics, energy conversion, materials, and systems and controls.

For graduation with a bachelor's degree in engineering, a minimum of

134 semester hours* of course work must be completed, including the following:

English. 6 s.h. This requirement is met by the completion of English 1-2.

Mathematics. 15 s.h. This requirement is met by completion of Mathematics 21, 22, 51, 63, and 111.

Natural Science. 16 s.h. This requirement is met by completion of Chemistry 1 and 2 and Physics 51 and 52.

Social Science or History. 6 s.h. This requirement may be satisfied by 6 hours from the following: Economics 1-2, or 51-52; History 1-2, or 51-52; Political Science 11 or 61 and another 3 s.h. political science course; Psychology 91, to be followed by either Psychology 100 or 101; Sociology 91 followed by another 3 s.h. sociology course.

Humanities. 6 s.h. This requirement may be satisfied by 6 hours from the following: English 55-56, 57-58; Classical Studies 111, 112, 121, 122; all foreign language literature courses above 100 not given in translation; Philosophy 41-42, 93-94; Art 51-52; Music 1-2, 51-52; Religion 1-2 or 51-52, 55, courses numbered 60-99.

Electives in Social Science, History, or Humanities. 6 s.h. In addition to the above, the student must elect a minimum of 6 semester hours of courses in social sciences, history, or humanities.

Physical Education. 4 s.h. Physical education is required during each of the first two years and is normally completed by the end of the sophomore year.

Departmental or Major Specifications. 43 s.h. In addition to the above requirements, 43 hours of courses in the third and fourth year are specified by the department in which the student is registered. A minimum of 16 hours of the 43 must be engineering courses of which 6 hours must be design-oriented studies.

Engineering Core Courses. 32 s.h. The normal engineering program includes 32 hours of engineering core courses, met by completion of Engineering 1, 2, 23, 53, 63, 73, 83, 101, 113, 123, 133, 143. Under special circumstances, a minimum of 10 hours of the normally required 13 hours of common-core engineering courses from the third- and fourth-year programs may be approved.

To provide the engineering student with the necessary background in

* A maximum of 6 hours of junior or senior level air science or naval science course work may be counted in satisfying the minimum requirements of 134 hours for a baccalaureate degree in engineering. These 6 hours may not be substituted for any of the above requirements in English, social sciences or history, humanities, or electives in social sciences, history, or humanities. All other credits earned in air science or naval science are taken in addition to the minimum program.

fundamentals upon which a variety of engineering programs of study can be based, and to relieve him of the necessity of committing himself immediately to a specific major branch of engineering, a common core of courses is provided for the freshman, sophomore, and part of the junior years.

Program of Studies for the Degree of Bachelor of Science in Engineering

Freshman Year

First Semester	*s.h.*	*Second Semester*	*s.h.*
Chem 1—Gen. Inorg. Chemistry	4	Chem 2—Gen. Inorg. Chemistry	4
Egr 1—Engineering Design I	2	Egr 2—Engineering Design II	2
Engl 1—Freshman Composition	3	Egr 23—Statics	3
Math 21—Introd. Calculus	3	Engl 2—Freshman Composition	3
Math 51—Digital Computation	3	Math 22—Introd. Calculus	3
PE—Physical Education	1	PE—Physical Education	1
	*16		*16

Sophomore Year

First Semester	*s.h.*	*Second Semester*	*s.h.*
†Egr 73—Mechanics of Deformable Bodies	3	†Egr 53—Egr Design III	2
†Egr 83—Structure & Properties of Solids	3	†Egr 63—Introductory Electric Systems I	4
Social Science, History, or Humanities	3	Social Science, History, or Humanities	3
Math 63—Intermed. Calculus	3	Math 111—Appl. Math Anal. I	3
Phys 51—General Physics	4	Phys 52—General Physics	4
PE—Physical Education	1	PE—Physical Education	1
	17		17

Junior Year

(See departmental programs: pages 11, 14, or 17.)

Senior Year

(See departmental programs: pages 11, 14, or 17.)

*Freshmen taking air science or naval science may need to schedule certain courses in addition to the 16 semester hours prescribed.

†The combination of Egr 73 and 83 is interchangeable with the combination of Egr 53 and 63.

Department of Civil Engineering

Comprising a very broad scope of activities, civil engineering is usually defined as the art of conception, design, analysis, and building of constructed facilities. However, the demands of contemporary civil engineering practice have transcended the traditional character of this oldest branch of engineering, and the modern civil engineer finds himself equally engaged in problems such as trafficability of planetary surfaces, or exploitation of mineral deposits of ocean bottoms, or optimization of an urban transportation system, to name a few.

There are six major specialty areas of civil engineering. *Hydraulic and ocean engineering* deals with the development and use of water and marine resources. This may include such diverse activities as multi-purpose reservoir development for flood control, hydroelectric power production, navigation, irrigation and recreation purposes, or it may take the form of facilities for wasteways, locks, river regulation, drainage, harbor development, coastal and tidal protection works, and offshore and submerged structures for marine resource development. *Structural engineering* is concerned with economical and safe design of all kinds of engineering structures such as public and industrial buildings, bridges, telecommunication and industrial towers, concrete dams, as well as aerospace and marine facilities such as radio-telescopes, missile launching pads, shore structures, etc. *Transportation engineering* deals with problems of design and construction, maintenance and administration of traffic facilities such as railroads, highways, airports, waterways, pipelines and subways, as well as with planning and management of transportation systems. *Geotechnical engineering* is concerned with interaction between engineering structures and the earth's crust, with particular emphasis on foundations and underground structures, as well as on structures constructed of earth as a material (earth dams, highway and airfield subgrades). *Sanitary engineering* deals with the quality of human environment and includes consideration of economic and health aspects of municipal and industrial water supply, wastewater treatment and disposal, solid wastes and the impact of intensive utilization of land, water and air resources on their ability to sustain urban growth. Finally, *urban engineering* encompasses a broad spectrum of integrated technological problems of urban areas such as land and city planning and development, mass transportation, public health and safety.

In view of the mentioned diversity of future professional activities of a civil engineer, his undergraduate education requires a breadth of knowledge in engineering and physical sciences as well as in humanistic, social, and biological sciences. Graduates of civil engineering curricula, particularly those with advanced degrees, find their employment with consulting offices, construction firms, industries, federal, state and local government. However, many civil engineers engage in private practice

as consulting engineers and independent designers, as well as in management planning, research and teaching.

For research and instruction in *structural mechanics* there are facilities for the construction and testing of structural models, including medium-speed electronic equipment for the measurement and recording of strains and displacements. Stress analysis facilities include a 10" research polariscope, brittle lacquer equipment, a reflection polariscope for use with photoelastic coatings, cameras for micro- and macro-photography, and a large-sized Begg's deformeter.

The *Soil Mechanics Laboratory* includes an outstanding variety of modern testing equipment and instruments. Particularly notable are the static and dynamic model testing accessories, as well as a high-pressure triaxial shear apparatus, designed for testing of soil and rock samples up to 2.8 inches in diameter at confining pressures up to 100,000 pounds per square inch.

The *Fluid Mechanics Laboratory* is equipped for instruction and research in selected areas of hydro-mechanics. For instruction, there is a portable transparent open channel flume, a portable wind tunnel with transparent test section, and a reservoir with connecting pipe and return channels for closed conduit flow. For research, equipment includes a 28 foot long, 15 inch wide, 18 inch depth water wave flume with paddle-type variable frequency, constant amplitude, wave generator. Sensors include parallel-wire resistance type wave probes and strain gaged pressure, force, and moment sensors. The instrumentation system provides recording of up to six channels of information, to the same time base, on a photographic-type oscillograph. The facility is particularly suited for conducting investigations of the response of various obstructions to surface gravity waves. A transparent test section permits visual observation of selected phenomena.

The *Sanitary Engineering Laboratory* is equipped for instruction and research in the characterization of waters and wastewaters and for the application of biological, chemical, and physical treatment methods to improve their quality.

The *Structural Engineering Laboratory* is equipped to give instruction in the basic principles of stress and strain and for the testing of structural members. Its facilities are adequate for both graduate and undergraduate instruction. Included in this laboratory are universal testing machines with capacities to 400,000 pounds; hardness testers; machines for testing torsion, fatigue, and impact; calibration apparatus; and a variety of modern strain gages.

The *Materials Laboratory* has the equipment necessary for both research and instruction in the physical properties and stress-deformation characteristics of bituminous mixtures, and concretes.

The department has a representative collection of *Surveying Equip-*

ment: transits, levels, plane tables, accessory equipment, precise levels and theodolites.

Program of Study in Civil Engineering for the Bachelor of Science in Engineering Degree

For *freshman* and *sophomore* years see page 8.

Junior Year

First Semester	*s.h.*	*Second Semester*	*s.h.*
Δ°Social Science, History, or Humanities	3	Δ°Social Science, History, or Humanities	3
°Egr 113 Electric Systems II	3	°Egr 101 Thermodynamics	3
°Egr 123 Dynamics	3	°Egr 133 Heat Transfer	2
°Egr 143 Fluid Mechanics	2	CE 96 Measurements	3
CE 131 Structural Mech. I	3	CE 123 Hydraulic Engrg	3
ΔApproved Elective	3	ΔApproved Elective	3
	17		17

Senior Year

First Semester	*s.h.*	*Second Semester*	*s.h.*
Δ°Social Science, History, or Humanities	3	Δ°Social Science, History, or Humanities	3
CE 118 Materials	2	CE 116 Transportation	3
CE 124 Sanitary Engrg.	3	CE 134 Struct. Design II	3
CE 133 Structural Design I	3	CE 150 Engrg. Systems	2
CE 139 Soil Mechanics	3	CE Elective	3
ΔApproved Elective	3	ΔApproved Elective	3
	17		17

Under special circumstances, a minimum of 25 semester hours of the normally required 31 semester hours in civil engineering courses may be approved by the Director of Undergraduate Studies.

ΔPart of a program of electives planned with departmental approval to suit the interests and abilities of the individual student. The program will include a minimum of 6 semester hours of either economics or political science. The program will also include a minimum of 9 semester hours in mathematics, the natural sciences, or other technical subjects; English 93 will normally be part of these 9 semester hours.

°Common-core courses.

First Graduate Year

The Master of Science program is planned as the fifth year of a five-year sequence of studies. Admission to the Master's program follows completion of the requirements for the Bachelor of Science in Engineering degree (at Duke University), or its equivalent (from another institution), and is contingent upon admission to the Graduate School.

First Semester	*units*	*Second Semester*	*units*
CE 200- or 300-level course	3	CE 200- or 300-level course	3
CE 200- or 300-level course	3	CE 200- or 300-level course	3
*Minor course	3	*Minor course	3
Approved elective course	3	Approved elective course	3
Thesis research	3	Thesis research	3
	15		15

Subsequent Graduate Study

For further information concerning work leading to the M.S. degree, as well as that leading to the Ph.D. degree, refer to regulations covering Graduate Degrees, and Civil Engineering Graduate Courses.

Department of Electrical Engineering

Electrical engineering utilizes the electrical and magnetic forces of nature and properties of matter to supply human needs. To an increasing degree its products and services influence the daily living of most of the world's population. It is concerned with the *processing and transmitting of information*—as in radar, television, telemetry, measurement, electronics, computation, and control. It is equally concerned with the *processing, transmitting, and controlling of energy*—as in solid state converters, magnetohydrodynamic generators, nuclear reactors, rotating machines, power systems, and automatic industrial processes. It provides most of our labor-saving home appliances and many of the instruments of modern scientific research and of modern medical practice.

The professional electrical engineer may engage in consulting, teaching, research, development, design, manufacturing, operation, maintenance, management and sales. His education must therefore provide a fundamental understanding of both the science of electrical engineering, which is based on mathematics and the physical sciences, and the art of electrical engineering, which depends on human imagination and judgment. It must also prepare him to be a responsible member of society by providing him with an appreciation of the humanities and the social sciences.

*Normally mathematics or natural science.

The program in electrical engineering at Duke, therefore, does not stress the mere acquisition of specific skills and methods, but seeks, in both classroom and laboratory, to stimulate students to think creatively in terms of fundamental concepts. It is hoped that, once started, creativity may become a habit. Such a program requires an able staff, extensive library resources, and well-equipped laboratories, such as are found here. The range of interests in electrical engineering which are included in this program may be conveyed by a brief survey of the laboratory activities.

The *Solid-State Materials Laboratory* is well-equipped for both instructional and research projects in which the macroscopic properties of materials, as exploited in devices, are studied at the microscopic and molecular levels. An X-ray diffraction diffractometer, a 9½-inch magnet, a spin-echo spectrometer, a vacuum deposition system, and metallurgical and stereoscopic microscopes are utilized in this work.

In the *Ferromagnetics Laboratory* investigations are being conducted into such properties of ferromagnetic materials as magneto-thermal, magneto-optical, magneto-resistive and magneto-strictive effects.

Research in the *Superconducting Circuits and Thin-Films Laboratory* is directed toward exploiting for engineering application some of the unique physical phenomena which are observed to obtain at temperatures in the vicinity of absolute zero. Related thin-film research is in progress. A major facility of this laboratory is an electron microscope providing a resolution of 7 A.

The *Electronic Laboratory* is equipped for the study of the physical behavior of basic electronic components and of advanced electronic devices and circuits.

In the *Energy Conversion Laboratory* the principles of generation, transformation, and control of energy are studied as they are applicable to large-scale power systems and small self-contained systems. Thermoelectric generators, photovoltaic sources, transformers, a-c and d-c motors and generators, and their associated controls are included in this work.

In the *Automatic Control Systems Laboratory* studies are made of the principles underlying the fields of instrumentation and automatic control. Modern, high-performance equipment is available for synthesizing control systems and for determining control system performance.

In the work of the *Spacecraft Systems Laboratory* principles from all phases of electrical engineering are brought to bear upon problems encountered in modern spacecraft technology.

In the *Spacecraft Telemetry Systems Laboratory* research centers on processing techniques for the recovery of information contained in noisy signals received form scientific satellites and space probes.

In the *Microwave Circuits Laboratory* studies are made of microwave circuits and systems using both time-domain reflectometry and swept-frequency techniques. Applications to radar and communication systems are shown.

The *Cryomagnetic Materials Laboratory* is equipped for research in the area of magnetic susceptibilities of materials at very low temperatures.

The *Digital Systems Laboratory* is utilized in instruction and research in the investigation of digital communications and logic systems. An on-line general purpose digital computer is available to this laboratory and others for signal processing and for simulation studies.

In the *Underwater Acoustic Communications Laboratory* the design and performance of optimum receivers for processing underwater acoustic signals is being investigated.

In the *Biomedical Engineering Laboratory* research is conducted on a diversity of projects ranging from the application of field theory to problems in cardiography to the investigation of ultrasonic imaging of internal tissue structures.

Program of Study in Electrical Engineering for the Bachelor of Science in Engineering Degree

For *freshman* and *sophomore* years see page 8.

Junior Year

First Semester	*s.h.*	*Second Semester*	*s.h.*
Δ °Social Science, History, or Humanities	3	Δ °Social Science, History, or Humanities	3
°Egr 113 Introd. Electric Systems II	3	°Egr 101 Thermodynamics	3
°Egr 123 Dynamics	3	°Egr 133 Heat Transfer	2
°Egr 143 Fluid Mechanics	2	°Egr 163 Fields	3
Math elective beyond Math 111	3	ΔMath elective beyond Math 111	3
Phys 161 Modern Physics	3	EE 161 Electronics and Signals	3
	17		17

Senior Year

First Semester	*s.h.*	*Second Semester*	*s.h.*
Δ °Social Science, History, or Humanities	3	Δ °Social Science, History, or Humanities	3
EE 162 Electromechanical Energy Conversion	2	EE 167 Design Colloquium	2
		ΔEE Elective	3

ΔPart of a planned program of electives to be chosen in consultation with the adviser.

°Common-core courses.

EE 163 Physical Electronics	3
EE 164 Electromagnetic Fields and Waves	3
ΔEE Elective	3
ΔApproved Elective	3
	17

ΔEE Elective	3
ΔApproved Elective	3
ΔApproved Elective	3
	17

First Graduate Year

The Master of Science program is planned as the fifth year of a five-year sequence of studies. Admission to the Master's program follows completion of the requirements for the Bachelor of Science in Engineering degree (at Duke University), or its equivalent (from another institution), and is contigent upon admission to the Graduate School.

First Semester	*units*
EE200- or 300-level course	3
EE200- or 300-level course	3
†Minor course	3
Approved elective course	3
Thesis research	3
	15

Second Semester	*units*
EE200- or 300-level course	3
EE200- or 300-level course	3
†Minor course	3
Approved elective course	3
Thesis research	3
	15

Subsequent Graduate Study

For further information concerning work leading to the M.S. degree, as well as that leading to the Ph.D. degree, refer to regulations covering Graduate Degrees, and Electrical Engineering Graduate Courses.

Department of Mechanical Engineering

The mechanical engineer is concerned with the design, control, and fabrication of machines for the production of useful energy or the processing of materials. He must lead in the development of new sources of power, propulsion, and transport. Included are the familiar internal combustion engine, steam turbine, nuclear reactors, and jet engines in use today, as well as fuel cells, thermionic and thermoelectric energy conversion, magnetohydrodynamic power, ion and plasma engines, and other new energy systems not yet known. The exploration of outer space and the depths of the oceans present challenging new problems. Further, there is the all-important task of providing the technological requirements of an ever increasing population with its demands for new

†Normally mathematics or natural science.

products in food, shelter, comfort, entertainment, and work-saving devices.

The curriculum in mechanical engineering has been planned to bridge the gap between the basic sciences on the one hand and the machine or process to be developed on the other. It is intended to prepare the individual for a career in (1) research and development; (2) design; (3) production, manufacturing, and operation; and (4) technical management.

Digital Computer programming is introduced at the freshmen level, and computer problem solving is incorporated into engineering course work throughout the curriculum. Programs are processed either at the Duke Computation Center or by teleprocessing from the engineering building to a large core storage computer at the Triangle Universities Computation Center. Elective courses in computer-aided design make use of both analog and digital computation facilities in the School of Engineering.

The department operates undergraduate laboratories for *measurements, materials development and processing, nuclear power, thermal and fluid systems, dynamic systems response and control,* and *senior projects.*

The *Measurements Laboratory* emphasizes selection of measurement systems and data analysis. Included are experience with transducers, analyzers, and recorders for measurements of force, speed, flow rate, temperature, velocity, energy, and sound.

The modern *Materials Laboratory* provides equipment for the preparation, testing, and microscopic examination of material samples over a broad range of conditions. Metals, polymers, and ceramics, as well as naturally occurring materials are included. Advanced project work uses such special equipment as ultrasonic generators, injection molders, heat treating furnaces, arc-melting furnace, etc.

In the *Thermal and Fluid Systems Laboratory* studies are conducted on such equipment as analog computers, heat exchangers, refrigeration compressors, a CFR engine, low-speed wind tunnel, hydraulic loops and a vacuum-propulsion system. Instrumentation includes a Mach-Zender interferometer, thermocouple data systems, engine indicators, constant-temperature anemometers, proximity probes, pressure transducers, flow meters, and associated analyzers and recorders. New additions will include a Mach 4 supersonic tunnel and radiation heat transfer equipment.

The *Dynamic Systems and Control Laboratory* permits study of dynamic response on a programmable electrodynamic shaker, shock stand, and with mechanical, magnetic, and acoustic exciters. Oscillators, narrow and broad band frequency generators, spectrum analyzers, filters, magnetic tape recorders, and other modern instrumentation provide the diagnostic means for vizualization, analysis and interpretation. Stability

ınd response of automatic control systems are studied with analog com-
ɔuters and with some real hardware systems, including an autopilot.

In the *Senior Projects Laboratory* the student defines the need for ex-
ɔerimentation, designs his "model" and instruments it to provide the
lesired data on an advanced project of his choosing. Oral and written
ɔresentation of the results are a vital part of the laboratory experience.

Program of Study in Mechanical Engineering for the Bachelor of Science in Engineering Degree

For *freshman* and *sophomore* years see page 8.

Junior Year

First Semester	s.h.	*Second Semester*	s.h.
Δ °Social Science, History, or Humanities	3	Δ °Social Science, History, or Humanities	3
°Egr 123 Dynamics	3	°Egr 113 Introductory Electric Systems II	3
°Egr 101 Thermodynamics	3	°Egr 133 Heat Transfer	2
°Egr 143 Fluid Mechanics	2	ΔApproved Elective	3
Math elective beyond Math 111	3	ME 102 Thermo II	3
ME 133 Mechan. Design I	3	Phys 161 Modern Physics	3
	17		17

Senior Year

First Semester	s.h.	*Second Semester*	s.h.
Δ °Social Science, History, or Humanities	3	Δ °Social Science, History, or Humanities	3
†ME 122 Transport Phenomena	4	ME 134 Mechanical Design II	2
ME 136 Response of Systems	4	ΔME Electives	6
ΔME Elective	3	ΔApproved Electives	6
Approved Electives	3		17
	17		

ΔPart of a planned program of electives, to be chosen in consultation with the ıdviser. Three of the nine semester hours of M.E. Electives must be design riented. A current listing of design-oriented courses is maintained by the department.

°Common-core courses.

†With the approval of the adviser, Egr 163 (Fields) or ME 226 (Intermediate 'luid Mechanics) plus one semester hour of special topic or project work may be ubstituted for ME 122.

First Graduate Year

The Master of Science program is planned as the fifth year of a five-year sequence of studies. Admission to the Master's program follows completion of the requirements for the Bachelor of Science in Engineering degree (at Duke University), or its equivalent (from another institution), and is contingent upon admission to the Graduate School.

First Semester	*units*	*Second Semester*	*units*
ME 200- or 300-level course	3	ME 200- or 300-level course	3
ME 200- or 300-level course	3	ME 200- or 300-level course	3
†Minor course	3	†Minor course	3
Approved elective course	3	Approved elective course	3
Thesis research	3	Thesis research	3
	15		15

Subsequent Graduate Study

For further information concerning work leading to the M.S. degree as well as that leading to the Ph.D. degree, refer to regulations governing Graduate Degrees, and Mechanical Engineering Graduate courses.

Division of Biomedical Engineering

Biomedical engineering is often defined as the application of the concepts and methods of the physical, mathematical, and engineering sciences to biology and medicine. This definition covers a very broad spectrum ranging from formalized mathematical theory through experimental science to practical clinical applications. The purpose of the undergraduate program in biomedical engineering is to permit engineering undergraduate students who plan to dedicate their professional careers to the biomedical area to prepare themselves adequately for graduate work in biomedical engineering, medicine, or biology. This program is flexible and statisfies the requirements for entrance to either graduate work in biomedical engineering or medical schools.

Program of Study in Biomedical Engineering for the Bachelor of Science in Engineering Degree

For *freshman* and *sophomore* years see page 8.

†Normally mathematics or natural science.

Junior Year

First Semester	*s.h.*	*Second Semester*	*s.h.*
ΔSocial Science, History, or Humanities	3	ΔSocial Science, History, or Humanities	3
°Egr 113—Intro. Electric Systems II	3	°Egr 123—Dynamics	3
Math 112—Appl. Math. Analysis II	3	Egr 101—Thermodynamics	3
Chem 151—Organic Chem.	4	Chem 152—Organic Chem.	4
Biology 1—General Biology	4	Biology 2—General Biology	4
	17		17

Senior Year

First Semester	*s.h.*	*Second Semester*	*s.h.*
ΔSocial Science, History, or Humanities	3	ΔSocial Science, History, or Humanities	3
°Phys 161—Modern Physics	3	°Egr 163—Fields	3
°Egr 133—Heat Transfer	2	°Egr 143—Fluid Mechanics	2
Egr Elective	3	Egr Elective	3
Egr Elective	3	Egr Elective	3
Δ†Elective	3	Δ†Elective	3
	17		17

nterdisciplinary Undergraduate Programs

This program parallels the majors in civil, electrical, mechanical, and iomedical engineering and, subject to faculty approval, is offered in elected areas such as engineering mechanics, energy conversion, naterials, and systems and controls.

The following requirements govern the interdisciplinary program:

1. The program shall meet the requirements of the Bachelor of Science in Engineering degree as outlined on pages 6-8, and shall in addition contain the requirements:

   (*a*) A minimum of 16 s.h. of engineering course work in addition to

ΔPart of a planned program of electives to be chosen in consultation with the lviser.

°These courses may be interchanged in any manner that maintains 17 semester ours per semester.

†It is recommended that students utilize these electives to strengthen their bio- iedical competence.

common-core courses must be taken in the third and fourth years of which 6 s.h. must be design-oriented studies.

(*b*) Limitation shall be placed on the amount of work which can be taken in a given department during the third and fourth years so that the advantages of interdisciplinary studies may be realized.

2. Each student enrolled in an approved interdisciplinary program shall be assigned to an appropriate engineering department for administrative purposes.

Graduate Degrees Offered

Through the Graduate School, the School of Engineering offers work leading to the degree of Master of Science (M.S.) and to the Doctor of Philosophy (Ph.D.) degree with a major in civil, electrical, or mechanical engineering.

Master of Science and Doctor of Philosophy Degrees with a Major in Engineering

Students with superior undergraduate, or introductory graduate, preparation in appropriate fields may participate in graduate study programs in engineering leading to the degrees of Master of Science and Doctor of Philosophy. The Master's degree requires successful completion of a minimum of 30 units of graduate work: 12 in engineering, 6 in related minor work, 6 in either the major or minor field or a relevant third field, and 6 for a research-based thesis. The doctorate requires beyond the Bachelor's degree, twice as many units of credit in each category as does the Master's degree, and, in addition, a reading knowledge of two foreign languages which are relevant to the field of the dissertation (normally two of the following: French, German, or Russian; foreign students may elect English as one of the required languages). Whereas the Master's thesis is expected to show the candidate's ability to conduct individual research, the doctoral dissertation is expected to demonstrate his ability to complete in a superior way a program of independent and original research. Each graduate student participates in seminars which are appropriate to his area of specialization.

Programs of Study in Civil Engineering for the Degrees of Master of Science and Doctor of Philosophy

Programs of advanced study, research, and design are available in six major areas: *engineering mechanics, structural engineering, soil mechanics and foundation engineering, fluid mechanics and hydraulic engineering, materials science and engineering,* and *sanitary engineering.* The

)epartment also participates in two interdisciplinary programs of grad-ate instruction and research; these are *biomedical engineering* and *ocean ngineering.*

Since the programs in most of these areas are interrelated with those ffered in other engineering and science departments at the University, ne curriculum offers a high degree of flexibility in individual study rograms. Appropriate combinations of the major areas with other areas f study are encouraged. Both science-oriented and engineering-design-riented activities can be selected to accommodate a wide range of tudent interests.

The graduate programs, as well as research and design activities, are lanned to prepare advanced students for positions of leadership in the ivil engineering profession.

A minimum prerequisite to the graduate program in civil engineering is basic knowledge of mathematics through linear differential equations, naterials science, solid mechanics, and fluid mechanics.

'rograms of Study in Electrical Engineering for the Degrees of Master of Science and Doctor of Philosophy

The Department of Electrical Engineering is currently engaged in an xtensive program of graduate instruction and research relating to man nd his environment. More specifically, this program is concerned with our major technical areas: (1) *fields and materials*, the mutual inter-ction of which is exploited in devices and systems; (2) *the processing nd transmitting of information*, as in television, radar, telemetry, mea-urement, electronics, computation, and control; (3) *the processing, ransmitting, and controlling of energy*, as in solid-state converters, uclear reactors, rotating machines, power systems, and automatic ndustrial processes; (4) interdisciplinary activities, as exemplified by *iomedical engineering.* Direction and impetus for the program derive oth from the interests of students and faculty and from the needs of ndustry and of government agencies. The production both of significant ew knowledge and techniques and of highly qualified new researchers nd practitioners is the goal of the graduate program in electrical engi-neering at Duke.

A minimum prerequisite to the graduate courses in electrical engineer-ng is a basic knowledge of differential equations, electric and magnetic ield theory, and the theory of networks. A previous course in modern hysics is recommended.

'rograms of Study in Mechanical Engineering for the Degrees of Master of Science and Doctor of Philosophy

The Department of Mechanical Engineering is engaged in a program f instruction and research directed toward the more effective generation,

use, and control of power through the application of scientific and engi neering knowledge of materials, mechanics, and energy transfer. At th graduate level emphasis is placed on advanced study, research, an design in three primary areas of *thermal and fluid systems, design an control of machines and processes,* and *development of materials.* In cluded are experimental and theoretical studies of heat and mass transfer thermodynamics, fluid mechanics, vibrations, dynamics of physical sys tems and machinery, automatic control, power generation, propulsion refrigeration and cryogenics, nuclear engineering, machine design, an the structure and forming of materials including metals, polymers, an ceramics.

Cooperating with the Division of Biomedical Engineering (a join division of the School of Engineering and Duke Medical Center), th department conducts research in biomechanics, biomaterials, and ther mal, fluid, and mass transfer problems in biological systems. Othe interdisciplinary research programs are starting in oceanographic engi neering, interaction of fields and materials, transportation engineering and signal processing and communications. Involvement with variou cooperating departments and schools at Duke University is one of th goals for graduate students involved in these interdisciplinary programs Increasing emphasis is placed on the development of creative abilitie of graduate students, and on relating the research to the needs of an er of exploding population and technical progress.

A minimum prerequisite to the graduate courses in mechanical engi neering is a knowledge of solid and fluid mechanics, energy processes materials scicnce, and advanced engineering mathematics.

Programs of Study in Biomedical Engineering for the Degrees o Master of Science and Doctor of Philosophy

An interdisciplinary program in biomedical engineering leading to th M.S. and Ph.D. degrees is offered. Students presently write their these and take their degrees in one of the engineering departments or physiol ogy. The purpose of this program is to encourage the optimum combin ing of engineering and biomedical course work with an interdisciplinar research topic so that the graduates of this program can contribute a the most advanced professional level to the interdisciplinary field o biomedical engineering. The major research areas available include biomechanics, biomedical materials, quantitative diagnosis, data acquisi tion and processing, and electrophysiology.

Undergraduate Special and Cooperative Programs

Reserve Officers Training Corps

Through the Naval and Air Force Reserve Officers Training programs the University is cooperating with the Department of Defense in providing well-educated officers for the active and reserve forces of the nation.

The Naval Reserve Officers Training Corps

There are two basic programs through which students can qualify for Naval commissions upon graduation: one, the Regular Naval Reserve Officers Training Corps program, provides a maximum of four years in the University largely at government expense, followed by a commission in the regular Navy or Marine Corps; the other, the Contract program, leads to a commission in the Naval Reserve or the U. S. Marine Corps Reserve. Additional information may be found in the *Bulletin of Undergraduate Instruction.*

The Air Force Reserve Officers Training Corps

The unit functions as a regular department of instruction known as

the Department of Air Force Aerospace Studies. It selects, trains, and commissions college men who possess the requisite character, intelligence desire, and sense of duty to become Air Force officers. Additional information may be found in the *Bulletin of Undergraduate Instruction*

Advanced Placement Program

Course placement is accomplished on the basis of good performance on either the Advanced Placement Examinations of the CEEB or—to a more limited extent—on placement tests given by Duke during Freshman Week. The College Board Advanced Placement Examinations are a vehicle to courses on the sophomore level or higher in botany, chemistry, English, French, German, history, Latin, mathematics, physics Spanish, and zoology, whereas the Duke tests are used to decide such placement only in foreign languages, biological science, and mathematics A further distinction is that only the AP Examinations may lead to credit toward graduation for the course or courses omitted and waiver of *uniform course requirements.* The departmental directors of undergraduate study and the University Registrar are charged with the responsibility for evaluations leading to advanced placement of freshman matriculants

Advanced Placement Examinations are given in May by the College Entrance Examination Board. Information regarding the tests may be obtained from the Board.

Study Abroad

Special programs for study abroad are available to Duke students Some of these noted below are organized by the University and others are available through special cooperative arrangements. In certain cases scholarship aid may be applied to study abroad.

Semester Study Abroad

Currently two programs are offered for a semester abroad:

Aix-en-Provence, France. Participating with the Vanderbilt in France program, courses are given during both Fall and Spring in French language, art, philosophy, literature. Completion of French 64, or equivalent, is required prior to departure.

Madrid, Spain. In cooperation with the Vanderbilt in Spain program for either Fall or Spring, work is given in Spanish language, art, music

and history. Completion of Spanish 64, or, equivalent, is required prior to departure.

Summer Study Abroad

Duke University sponsors a variety of summer programs abroad. Open to qualified Duke students, these programs have taken place in France, Germany and Italy. Students are selected competitively and have an opportunity to earn up to eight hours of credit. Information regarding study abroad may be obtained from Deans Jane Philpott and Peter Carbone. In all cases, they must be informed in advance.

A student contemplating study abroad should be guided by the following provisions established by the Undergraduate Faculty Council and administered by the Committee on Study Abroad.

The student should

1. have a scholastic average of at least 2.5 (recommended);
2. obtain prior permission to study abroad from major adviser and academic dean;
3. receive certification from the foreign language department concerned that he can handle adequately the language of the country where he will study, provided that the language be taught at the freshman-sophomore level at Duke.
4. obtain, before matriculation, approval of his program of studies from major adviser and academic dean.

If the student wishes to transfer credit to Duke

1. and is participating in a program sponsored by an American group, the group must have been approved by the above committee and the program he proposes must meet the qualifications of the sponsoring group
2. or studies abroad under his own sponsorship, work to be considered for transfer must be done in the language in which courses are normally given in the institutions attended.

A leave of absence from the University is arranged for students who qualify. When possible, arrangements are made for students to preregister while abroad for the semester in which they return.

Eligibility for Special Curricular Programs

Reading-out of Introductory Courses

The option to "read" in order to by-pass introductory or pre-requisite courses is open to students of demonstrated academic ability to allow

them to advance at their own pace to upper-level work. This opportunity ensures a richer program for the student who has few places in his curriculum for electives. Any student interested in reading during the summer to by-pass an introductory or pre-requisite course must be recommended by his dean and secure the permission of the department concerned. Reading for a course and auditing are mutually exclusive procedures. A proposed program of reading should be approved by the Director of Undergraduate Studies in the department in which the work will be done. On passing a three-hour qualifying examination prepared by the department a student may be certified for advanced course work in the area. On completion of an advanced course, an entry will be made on his permanent record that he has passed a qualifying examination but no course credit is awarded. Interested students should request further information from the Dean's Office.

Independent Study

Upon recommendation of the department, a student may be permitted to enroll for independent study during his junior and/or senior years. A student need not be in a Graduation with Distinction program to enroll in independent study courses. The maximum credit allowed for independent study and honors research courses is three semester hours per semester during the junior year and six semester hours per semester during the senior year. Interested students should consult the Director of Undergraduate Studies in the department in which they wish to work.

Graduation with Distinction

Programs featuring independent study and other honors opportunities are available under the title Graduation with Distinction in all three departments. Although the details and requirements of the program vary from department to department, certain general requirements are uniform. Each department participating invites, at the end of their junior year, those students who have maintained at least a "B" average in the major field and an over-all average of "B" to enter the Graduation with Distinction Program. Upon recommendation of the department and with the permission of the Honors Committee, a student with an average slightly below "B" may be admitted to the Graduation with Distinction Program. However, he must achieve a "B" average in his major department and an overall average of "B" by graduation to be eligible for Graduation with Distinction in his major field. After participation in a senior seminar, and/or a directed course of reading, laboratory research, or other independent study, the student must embody the results of his individual research and study in a distinguished piece of writing. The paper is assessed by a departmental committee which, if it approves, recommends



that the student be Graduated with Distinction in his major field. Interested students should consult the Director of Undergraduate Studies in the appropriate department.

Reciprocal Agreement with the Consolidated University of North Carolina and North Carolina College

Under a plan of cooperation between the Consolidated University of North Carolina and Duke University, and between North Carolina College and Duke University, students regularly enrolled in the Consolidated University and in North Carolina College during the regular academic year, and paying full fees to their institutions, may be admitted to two approved courses per semester at Duke University upon payment of a nominal registration fee of two dollars plus any other special fees required of all students. Under the same arrangements, students at Duke University may be admitted to one approved course per semester at the Consolidated University of North Carolina or North Carolina College.

Student Life

Living Accommodations

As the undergraduate units of the University are resident institutions, all students are required to live in the residence halls. Any exceptions must be approved by the Dean of Men or the Dean of Women. Rooms are not rented for a shorter period than one semester. No refund of room rent will be made except for involuntary withdrawal to enter the armed services. Such refunds are made in accordance with the University's established schedule. (See *Financial Information* for living expenses.)

Housing

Undergraduate Men. Upon their admission to the School of Engineering, men students are sent detailed information by the Dean of Undergraduate Men concerning their obligations under the housing contract. Certain houses are reserved for members of the freshman classes. Each of these units has a resident Head Housemaster and one or more Housemasters. A limited number of Freshmen reside in other houses where they live in community with upperclass students and a Fellow, a Faculty member or an advanced graduate student who serves as their adviser.

Undergraduate Women. Women students enrolled in engineering live in the residence houses of The Woman's College. (A section of the Graduate Center, West Campus, is also reserved for undergraduate women.) These houses are alike in their organization. In each of them there is a

resident House Counselor, who is a member of the Dean's staff, and full representation from all four classes, with the appropriate number of places reserved each year for freshmen.

Graduate Housing. Duke University strives to provide comfortable, attractive living accommodations for graduate-level resident students, both married and unmarried.

The Graduate Center houses 197 male graduate students, 56 women graduate students, and 117 women undergraduates. Commons facilities on the main floor are shared by men and women.

Room reservations are made through the Office of Housing Management only after official acceptance for admission to the University.

Rooms in residence Halls are normally rented for the academic year, but for no period less than one semester or specific term.

Duke University has 98 one-bedroom luxury apartments under lease for a period of three years. An additional 104 two and three bedroom apartments will be under lease for one year to meet student requirements until a new married student housing complex is ready for occupancy about mid-summer 1970. All units are within walking distance of the campus. Detailed information and rental rates will be provided on request to applicants by the Director of Housing Management, Duke University, Duke Station, Durham, N.C., 27706.

A deposit of $25 is required with applications for residence halls or apartment units. The conditions for refund of the deposits will be provided at the time housing information is sent to each applicant.

All requests for information for apartment-type accommodations should be addressed to the Director of Housing Management, Duke University. Specific information will be supplied as available.

For the cost of housing at Duke, see the section on Financial Information.

Dining Facilities

The dining facilities on the West Campus include two cafeterias, with multiple-choice menus, and the Oak Room where full meals and *a la carte* items are served. The dining halls in which all resident women have their meals are located in the Woman's College Union and in Gilbert-Addoms residence hall. Because of the large number served in the dining halls, it is not possible to arrange special diets for individual students. The Graduate Center has a cafeteria and a coffee lounge.

Services Available

Medical Care

The complete medical facilities of the Duke University Medical Center are available to all members of the University community. To secure the

benefits of the Student Health program, a graduate student during the term or semester in which the illness occurs must (1) in the Summer Session term be registered for at least 1 unit research or 3 units of course work, (2) prior to completing minimum residence requirements be registered for at least 9 units per semester. Students are not covered during vacations and their dependents and members of their family are not covered at any time. Care is provided for men at the Student Health Office in Duke Hospital and for women at the Woman's College Infirmary.

The service provided includes hospitalization in Duke Hospital, when recommended by the Hospital staff, to a limit of thirty days; medical and surgical care under the supervision of a senior physician or surgeon; drugs, X-ray work, and ward nursing. Students pay for board while in the hospital. Excluded from the service are refraction of eyes, treatment of teeth, and of all chronic and pre-existing conditions, and elective surgery.

Graduate students are urged to carry adequate health insurance to supplement Student Health Program services. If students have insurance providing hospitalization, surgical, or medical benefits, the benefit shall be applied to the cost of their medical care. *Foreign students are required to hold this or another acceptable policy.*

Student Activities

Engineering students new to Duke University are reminded that they are welcome to use such recreational facilities as swimming pools, tennis courts, golf course, and to affiliate with choral, instrumental, drama, and religious groups.

The Counseling Center

The University maintains a counseling center which provides educational, vocational, and personal counseling for students. The Center is the administrative agency for most of the national testing programs, including admissions tests for graduate and professional schools. A library of information on occupations, graduate training, and fellowships for graduate study is maintained.

The counseling and information services of the Center are free to Duke students. Additional information on the counseling, testing, and information services may be secured from the Duke University Counseling Center, 309 Flowers Building, Duke University, Durham, North Carolina 27706.

Appointments (placement) Office

Duke University maintains an Appointments (placement) Office which acts as a liaison between the University and potential employers in busi-

ness, education, and government. All services are offered without charge to Duke students and alumni. The staff is available to talk with students about their future professional plans. Forestry students who wish to register with the office are offered an opportunity to assemble a complete dossier of academic records and recommendations to supplement applications for positions and to have a permanent file for future reference. Pertinent recommendations are far easier to accumulate during the time a student is enrolled at Duke. Interviews with representatives visiting Duke are scheduled throughout the year through the Appointments Office for those students who have registered. Copies of academic records are released only with the permission of the individual.

Organizations and Activities

Engineers' Student Government

The Engineers' Student Council, composed of approximately 14 members from the various organizations and classes in the engineering student body, coordinates the activities of all student organizations in the School. The Council acts to represent the interests of the students in their relationships with the public, the faculty, and the administration. The Council is responsible for such activities as the Engineers Show, homecoming displays, supervision of the student Lounge, social events, and the Engineers Guidance Council.

Engineering Student Publication

The DukEngineer, official student-published magazine of the School, which appears twice each semester, contains articles on technical and semi-technical topics and other matters of interest in the School.

General Activities Open to Engineers

As part of the University Community, students in the engineering programs share in all activities open to students.

Student Branches of Engineering Professional Societies

The three Departments of the School support student branches of the following national professional engineering societies: *American Society of Civil Engineers, American Society of Mechanical Engineers, Institute of Electrical and Electronics Engineers.*

Engineering Guest Speaker Program

In addition to his participation in the student branches of the national professional engineering societies, the student has the opportunity of

additional development through the *Engineering Guest Speaker Program*. The general function of the series is to provide stimulating lectures by outstanding members of the engineering profession.

Engineering Honor Societies

Tau Beta Pi. Engineering national honor society—Gamma Chapter of North Carolina.

Chi Epsilon. Civil engineering national honor society—Duke University Chapter.

Eta Kappa Nu. Electrical engineering national honor society—Delta Lambda Chapter.

Pi Tau Sigma. Mechanical engineering national honor society—Pi Iota Chapter.

Order of St. Patrick. Honor society recognizing leadership in engineering student activities.

General Honor Societies

In addition to the national engineering student honor societies, students of the School are eligible for membership in the national and local honor societies throughout the campus.

Engineering Awards and Prizes

The Tau Beta Pi Prize is awarded each year by North Carolina Gamma Chapter of Tau Beta Pi, engineering national honor society, to a sophomore student in engineering for outstanding scholastic achievement during the freshman year.

The Walter J. Seeley Scholastic Award is presented annually by the Engineers' Student Government to that member of the graduating class of the School who has achieved the highest scholastic average in all subjects, and who has shown diligence in pursuit of an engineering education. The award was initiated to honor the spirit of academic excellence and professional diligence demonstrated by Dean Emeritus Walter J Seeley. The Council hopes that this award will serve as a symbol of the man and the ideals for which he stands. The name of the recipient is inscribed on a plaque displayed in the Engineering Building.

The Hamilton Watch Award is presented by the Hamilton Watch Company to the senior in Engineering who has most successfully combined proficiency in his major field of study with notable achievements in social sciences and humanities. The award is a Hamilton electric watch appropriately engraved, accompanied by a letter of commendation to the recipient.

The American Society of Civil Engineers Prize is awarded annually by the North Carolina Chapter of the American Society of Civil Engineers to two outstanding seniors in Civil engineering, upon recommendation of the Faculty of the Civil Engineering Department. The basis for selection is the student's scholastic record, his contribution to the Student Chapter, and his participation in other college activities and organizations. The Prize consists of a Certificate of Award and the payment of one year's dues in the American Society of Civil Engineers.

The American Public Works Association Prize is awarded annually by the North Carolina Section to an outstanding senior in Civil Engineering upon the recommendation of the faculty of the Civil Engineering Department. The basis for selection is the student's scholastic record and his interest in a career in public works. The Prize consists of a Certificate of Award, one year's payment of dues in the American Public Works Association, and a $25 cash award.

The George Sherrerd III Memorial Award in Electrical Engineering is awarded annually to that senior student in electrical engineering who, in the opinion of the Electrical Engineering Faculty, has attained the highest level of scholastic achievement in all subjects and simultaneously has rendered significant service to the School of Engineering and the University at large. The Award was established in 1958 by the parents of George Sherrerd, III, a graduate of the Class of 1955, to recognize outstanding undergraduate scholarship. The recipient receives a monetary award and his name is inscribed on a plaque displayed in the Engineering Building.

The Charles Ernest Seager Memorial Award recognizes outstanding achievement in the annual Student Prize Paper Contest of the Duke Branch of the Institute of Electrical and Electronics Engineers. The Award, established in 1958 by the widow and friends of Charles Ernest Seager, a graduate of the Class of 1955, consists of inscribing the name of the contest winner on a plaque displayed in the Engineering Building.

The Milmow Prize is awarded annually to the student from North or South Carolina graduating in the Department of Electrical Engineering who, in the opinion of the Faculty of that Department and, as shown by his grades, has made the most progress in electrical engineering during his last year in School. The prize consists of a Certificate of Award and one year's payment of dues in the Institute of Electrical and Electronics Engineers for the membership year in which the honoree is awarded his baccalaureate degree.

The American Society of Mechanical Engineers Award is presented annually to a senior in mechanical engineering for his outstanding efforts and accomplishments in behalf of the American Society of Mechanical Engineers Student Section at Duke. The Award consists of a Certificate of Recognition.

The T. C. Heyward Award is given annually to the outstanding

Mechanical Engineering Sophomore by Pi Tau Sigma. The Award will normally consist of a handbook as well as a small cash award.

The Machinery Magazine Award is presented annually by The Industrial Press, publisher of the magazine, to the outstanding student in machine design in the graduating class. The Award consists of a copy of the latest edition of *Machinery's Handbook.*



Admission

Undergraduate

New students are admitted to the School of Engineering in September of each year.

Because enrollment is limited, the Committee on Admissions selects those students who in its judgment are best qualified to benefit from the opportunities which the School offers. Selection is based not only upon grades and test scores but also upon recommendations of school officials, and other personal criteria.

Requirements

Although there are no inflexible subject matter requirements, at least 15 acceptable units of secondary school credit must be presented. Of these at least 12 must be in college preparatory subjects: English, foreign language, history and social studies, mathematics, and physical or biological sciences. Applicants for the School of Engineering are advised to present four units of mathematics and at least one unit in physics or chemistry.

Students applying for admission are required to take the Scholastic Aptitude Test, the English Composition Test, the appropriate mathematics test, and one other achievement, test of their own choosing given by the College Entrance Examination Board.

Prospective students are urged to broaden their reading outside c class during their senior year and to make the acquaintance of books an magazines that do not form part of the subject matter of their course At the same time, they should take every opportunity to increase thei competence in writing. Those who cannot write simple, clear, gram matical English prose will be progressively at a serious disadvantage i the competition for admission and also in the general work of the fresh man year.

Early Decision Plan

For the well-qualified student who has definitely decided to enter Duk if accepted, the University offers to reserve a place by Early Decision o December 1 of the student's senior year in secondary school. The deadlin date for completing applications for Early Decision is November 1 Interested students should write to the Office of Admissions for detailed information.

Regular Admission

Candidates for regular admission must apply no later than January 1 and normally do so during the fall of the senior year. For this group decisions are mailed by April 15.

Application forms and instructions regarding procedure and necessar supporting documents will be sent upon request to the Office of Ad missions, Duke University, Durham, North Carolina, 27706. A non refundable processing fee of $15.00 must accompany the application form

A candidate for admission who wishes to arrange an interview shoul do so through the Director of Undergraduate Admissions.

Admission to Advanced Standing

Admission by transfer from other institutions may be arranged for number of students under certain well-defined regulations. All such candidates must submit official transcripts of all work completed a other colleges, accompanied by a statement of honorable dismissal an scores on the Scholastic Aptitude Test of the College Entrance Examina tion Board. Courses on which a grade less than C has been earned can not be accepted for transfer credit. Students may not apply for transfe beyond admission to the junior class.

A small number of special students of mature age may be admitted fo such courses of instruction as their earlier training and experience ma qualify them to take. They may not be accepted as candidates for degree, however, unless they meet all normal requirements for admissio

Readmission of Former Students

A student who desires to return, following withdrawal from the University should apply to the Director of Undergraduate Admissions. He will be asked to send a detailed statement of his activities since withdrawal. If practicable, the student should arrange for an interview with the appropriate Dean.

Graduate

Prerequisites

A student seeking admission to the Graduate School of Duke University with a major in engineering must have received a Bachelor's degree from an accredited institution. His undergraduate program should be well founded and of such quality as to give positive evidence of capacity for graduate study. Normally he should have majored in the area of his intended graduate study. The three Departments of Engineering list specific prerequisites in the section of this Bulletin entitled Graduate Degrees Offered.

Students Requiring Admission

Admission is required of (1) all students who intend to pursue study toward a degree offered by the Graduate School, (2) all other students who desire credit for whatever purpose for graduate courses—except students who register as special students in the Summer Session. Students who have discontinued a program of study after earning a master's degree here must by letter request permission of the Dean of the Graduate School to undertake a doctoral program. Members of the Duke University faculty will be granted only non-degree admission.

Procedure for all Applicants

A student seeking admission to the Graduate School should request the Dean of the Graduate School to send an application blank. This he should fill out completely and return promptly. In addition he should provide the following supporting documents: (1) a transcript or transcripts of all his undergraduate and graduate work mailed directly by the Registrar to the Dean; (2) as soon as possible, supplementary transcripts showing completion of work in progress when the earlier transcript was made; (3) three letters of recommendation written by persons best qualified to judge him as a prospective graduate student and mailed directly to the Dean; and (4) scores on the Graduate Record Examination (recom-

mended for all applicants and required of applicants for fellowships) and Miller Analogies Test (recommended for all applicants).

All applicants except foreign students applying from outside the United States and non-degree students must include an application fee of $5.00 in check or money order payable to Duke University.

Additional Procedure for Foreign Students. Fully qualified students from outside the United States are welcomed in the Graduate School to take courses and in many instances to study toward a degree. In addition to the information required of all students, the foreign student should submit with his application for admission certain special information, as outlined in the *Bulletin of the Graduate School.*

Closing Dates for Applications

Because applications cannot be reviewed until all required supporting documents are filed, applications for admission to the Graduate School should be submitted at least *two weeks* before the closing dates listed below:

Fall semester, admission and award	February 15
Fall semester, admission only	August 1
Spring semester, admission only	January 1
Summer Session,* First Term	May 12
Summer Session,* Second Term	June 20

Notification of Admission

When admission to the Graduate School is approved, the student will receive a letter of admission and an acceptance form. The process of admission is not complete until the statement of acceptance has been returned. (For a more complete discussion of admission status, refer to the *Bulletin of the Graduate School.*

*Students seeking admission to the Summer Session should make application to the Dean of the Graduate School as well as to the Director of the Summer Session

Financial Information

Undergraduate Tuition Fees and Other Expenses

Tuition and fees paid by the students cover only a part of the cost of their instruction and of the operations of the University. Income from endowment and contributions from the alumni, alumnae, and other public-spirited men and women meet the balance, which constitutes almost two-thirds of the total cost.

Estimated Expenses for an Academic Year

Certain basic expenditures are to be considered in preparing a student's budget, such as tuition, general fee, room, and board. These necessary expenditures together with a reasonable amount allotted for miscellaneous items such as books and supplies are shown below:

	Men	*Women*
Tuition	$1,800.00	$1,800.00
General Fee	200.00	200.00
Room Rent (Double Room)	335.00	360.00
Board	*650.00	†550.00
Books and Supplies	150.00	150.00

*Cafeteria estimate. †Board rate.

It should be realized that additional expenses will be incurred which will depend to a large extent upon the tastes and habits of the individual. It is realistic to suggest that the average Duke student, however, can plan on a budget of $3,600.00 for the academic year. Travel costs, clothing purchases, and other major expenditures would have to be added to this estimate.

Debts

No records are released and no student is considered by the faculty as a candidate for graduation until he has settled with the Bursar for all indebtedness.

Bills may be sent to parents or guardians provided the Bursar has been requested in writing to do so. Failure to pay bills on or before the due dates will debar the student from class attendance until the account is settled in full.

Tuition and Fees

Tuition. The tuition and general fee of $1,000.00 is due and payable not later than the day of registration for a particular semester. After the day of registration no refund of tuition will be made except for involuntary withdrawal to enter the armed services.

Registration Fees and Deposit. New students, on notification of acceptance, are required to pay a non-refundable first registration fee of $20.00 and to make a deposit of $50.00. The deposit will not be refunded to accepted applicants who fail to matriculate. For those who do matriculate, $25.00 of the deposit serves as a continuing room deposit for successive semesters, and the remaining $25.00 serves as a continuing registration deposit. Arrangements for refund of the $25.00 room deposit are described in information furnished each resident student by the Office of Housing Management.

Readmission. Students who have been readmitted to the University after an absence of one or more semesters, on notification of readmission, are required to make the $50.00 room and registration deposit.

Late Registration. Students who register in either semester at a date later than that prescribed in the Calendar of the School must pay to the Bursar a fee of $10.00.

Refunds. The $25.00 pre-registration deposit will be refunded to students (1) whom the University does not permit to return, (2) who graduate, or (3) who request the refund at the time of pre-registration, thus indicating their intention not to return for the following semester. The pre-registration deposit will not be refunded to students who pre-register and fail to enter the following semester on schedule.

ROTC Deposit. An Air Force ROTC deposit of $20.00 is required of students enrolling in Air Science to cover possible loss of military equipment issued to them. This deposit is refunded to the student upon return of issued equipment.

Fees for Special Students. In the regular academic year students who register for no more than two courses with a maximum credit of eight semester hours are classified as special students. They are charged a registration fee of $5.00 for each course and $65.00 for each semester hour of course credit. Registration for nine or more semester hours, or three or more courses, requires payment of full fees.

Fees for Auditing. Auditing of one or more courses without charge is allowed students paying full fees, provided that the consent of the instructor is obtained. Students who are enrolled for not less than three nor more than eight semester hours may audit other courses by payment of $32.50 for each course audited.

Fees for Duke Employees. In order to encourage its employees in their professional and personal advancement, Duke University will permit full-time employees who are paid on a monthly basis for two or more years to take one or two courses, but not more than seven semester hours and will charge $5.00 per course plus $32.50 per semester hour. Courses may not be audited unless at least one course is taken for credit.

Fees for Transcripts. Requests for transcripts should be directed to the Office of the Registrar. Ten days should be allowed for processing. A minimum fee of $1.00, payable in advance is charged for a single copy. A charge of $.50 will be made for each additional copy on the same order.

Fees for Course Changes. Changes in courses for reasons not arising within the University require a payment of $1.00 for each change made. No course may be elected later than one week after the opening of the semester, and no student may be admitted to any class without an official enrollment.

Living Expenses

Housing. In the residence houses for undergraduate men, the rental charge for a single room is $445.00 for the academic year or $222.50 for each semester; for a double room the charge is $335.00 for each occupant, or $167.50 per semester for each occupant. Rental rates in the air-conditioned dormitories are $500.00 for a single room for the academic year, or $250.00 for each semester; for a double room the charge is $375.00 for each occupant, or $187.50 per semester for each occupant. Information concerning the student's obligations under the housing contract is published in the *Bulletin of Information and Regulations, Trinity College and the School of Engineering.*

In the residential units of the Woman's College the rental charge for a single room is $480.00 for the academic year or $240.00 for each semester. The rental charge for a double room is $360.00 for each occupant, or

$180.00 per semester for each occupant. Detailed information concerning the student's obligations under the housing contract is published in the Woman's College Handbook.

Food Services. The dining facilities on the West Campus include two cafeterias, with multiple-choice menus, and the Oak Room where full meals and *a la carte* items are served. The cost for the academic year will approximate $650.00 but will vary from this amount depending upon the individual.

The dining halls in which all resident women have their meals are located in the Woman's College Union and in Gilbert-Addoms residence hall. The charge for board is $275.00 per semester, payable at the time of registration.

Graduate Fees and Expenses

The following table shows the general fees and charges collected from all graduate students. All fees for each semester are due and payable, unless otherwise specified, at the time of registration for that semester. All fees are subject to change without notice. No student is admitted to classes until arrangements have been made with the Bursar of the University for the settlement of fees.

Tuition per semester ($57.00 per unit)	$855.00
Athletic Fee, not including federal tax, optional, per year, payable in the fall semester	25.00
Binding fee, three copies of thesis or dissertation, other copies optional, $5.00 a copy	15.00
ETS Foreign Language Test, each administration, payable to the University Counseling Center	8.00
In absentia fee, due on date of registration one unit per semester	57.00
Late registration fee	10.00
Microfilming fee, doctoral degree only, upon final submission of dissertation	25.00
Housing (See detailed statement, *Bulletin of Graduate School.*)	

Tuition for a full semester program of 15 units amounts to $855.00. For a part program, tuition is computed at the rate of $57.00 per unit.

Undergraduate Financial Aid

It is the aim of the Financial Aid Program to provide, insofar as possible, assistance required by students who are unable to defray the cost of college from their own resources. This assistance is made available in the

form of scholarships, grants-in-aid, loans, and part-time employment.

In 1968-69 financial aid totaled $1,772,000.00. Of this amount $1,053,565.00 was allotted to 1,196 undergraduate students in the form of scholarships, grants-in-aid, and remissions of tuition; $318,800.00 in student loans, and approximately $400,000.00 through part-time employment on the campus and in the city of Durham and the surrounding area.

Freshmen students shared proportionately in this aid: 478 received awards totaling $474,590.00 in direct assistance not including loans or part-time employment. Loans were made to 231 students totaling $107,350.00 in addition to other assistance received from Duke University.

Scholarships

All undergraduate requests for application forms for scholarships, grants-in-aid, industry scholarships, or remission of tuition should be addressed to the Office of Undergraduate Admissions, Duke University, Durham, North Carolina 27706.

All candidates for scholarships and grants-in-aid must submit an official Application for Admission to the University and the Application for Scholarship to the Office of Admissions. Scholarship candidates who desire to be considered for the maximum value of scholarships on the basis of financial circumstances are required to submit the "Parents' Confidential Statement" of the College Scholarship Service. The "Parents' Confidential Statement" may be obtained from high school principals or upon request from the Admissions Office.

Scholarship candidates should initiate their applications during the fall semester of their senior year of study in secondary schools. Instructions concerning the specific requirements and deadline dates will accompany the application materials sent to applicants for scholarships and grants-in-aid.

Awards annually available to all undergraduate students at Duke University are listed in the *Bulletin of Undergraduate Instruction.*

Engineering Scholarships

Engineering Scholarship Fund was established by gifts of various persons, to be used for scholarship aid to engineering students.

Thomas R. Mullen, Jr., Scholastic Fund was established April 5, 1949, by gift of T. R. Mullen in memory of his son, the income to be used for scholarship assistance to students in the School of Engineering. Preference is to be given students who are children of employees of the

Lehigh Structural Steel Company or others nominated by the Company. One award is available each year.

Jones Scholarship Fund was established in 1951 by Edwin L. Jones, Sr., '12; Annabel Lambeth Jones, '12; Edwin L. Jones, Jr., '48; Lucille Finch Jones; and the J. A. Jones Construction Company in memory of James Addison Jones and Raymond A. Jones; a portion of the income to be used for scholarship aid to worthy and qualified students in civil engineering.

Alcoa Scholarship in Engineering was established in 1962 by the Alcoa Foundation. One award of $625.00 per year is made to a student preparing for a career in either electrical or mechanical engineering.

Western Electric Fund Scholarship was established in 1957 by gift of the Western Electric Fund; a scholarship in the amount of $800.00 is given annually to an outstanding student in the field of electrical engineering who has completed the sophomore year of study.

Union Bag-Camp Corporation Scholarship was established in 1957 by gift of the Union Bag-Camp Corporation to provide a scholarship of $600.00 to a student in the fields of chemistry or mechanical engineering in alternate years.

Collier Cobb Associates Scholarship provides an award of $1,000 for the support of one or two worthy and needy students at the junior or senior level in the School of Engineering. The Program was established in 1967 by Collier Cobb and Associates, Inc.

Duke University participates in several other industry scholarship programs. Several of these awards for which freshmen may apply are assigned to engineering students annually although they are not restricted to students in this field of study. Among the available awards are the General Motors Scholarships and the Texas Company Scholarships.

Tuition Grants

Tuition grants are available to children of certain qualified staff members of Duke University for a maximum of eight semesters of undergraduate study at Duke.

Loans

Loan funds held in trust by the University as well as funds supplied by the federal government through the National Defense Education Act of 1958 are available to qualified students. Freshmen as well as upperclassmen are eligible to apply for a student loan.

For details concerning loans, see the *Bulletin of Undergraduate Instruction.*

The Student Loan Committee in approving loan applications selects

those students who from the standpoint of character, scholastic attainment, personality, and degree of financial need deserve assistance.

Employment Opportunities

The Financial Aid Office maintains an employment office to serve students who need part-time jobs. There are many opportunities both on the campus and in the city of Durham. A considerable number of students each year help defray their college expenses by working.

Those students accepted for admission to the School of Engineering in need of part-time employment should apply to Financial Aid Office, Duke University, Durham, North Carolina 27706. Women students who need and qualify for part-time campus employment should apply to the Assistant Dean of Undergraduate Women, 111 East Duke Building, Duke University, Durham, North Carolina 27708.

Graduate Financial Aid

Awards through the Graduate School

For the encouragement and financial assistance of graduate students of marked ability, Duke University has established a considerable number of fellowships, scholarships, and assistantships. The stipends for these range up to $4,000 for the academic year. Holders of grants pay tuition and other fees regularly required of all graduate students.

Fellows and scholars pay full tuition and fees and are expected to register for a full schedule of course work each semester. In general, assistants register for a four-fifths program and pay 12 units tuition and fees per semester.

Application for these awards, along with all supporting documents, must be submitted on or before February 15. Notification may normally be expected by late March. Late applications will be considered, should any vacancies occur in the list of appointees. No appointment is made for longer than one academic year.

Further information and application forms may be obtained from the Dean of the Graduate School, Duke University, Durham, N. C., 27706.

Special Fees for Teachers and Others

The Graduate School recognizes a special obligation to encourage the following types of students in their professional and personal advancement: (1) members of the faculties of the neighboring public schools and colleges, currently engaged in *full-time* teaching while taking courses in the Graduate School, (2) ministers of neighboring churches, (3) wives of Duke faculty members, (4) *full-time* employees of Duke University

who are paid on a monthly basis throughout the year for two or more years.* The reduced tuition rates do not apply to teachers and ministers while on leave of absence, not to holders of fellowships, scholarships, or graduate and research assistantships, nor to part-time instructors.

Persons eligible for the reduced tuition rate must meet the admission standards required of all graduate students and must be admitted to the Graduate School. They may enroll for one or two courses per semester (in no case totaling more than 7 units) upon the payment of a fee of $5.00 for registration for each semester and tuition of $30.00 per unit of credit or an audit fee of $30.00 per course.

Awards through the School of Engineering

The School of Engineering and its component departments are able to offer appointments as teaching and research assistants to graduate students in engineering. Stipends range up to $3,400 for the academic year.

Further information concerning these appointments and procedures for making application may be obtained form the Chairman of the Graduate Studies Committee, School of Engineering, Duke University, Durham, N. C., 27706.

Stipends and Income Tax

Ordinarily stipends awarded under fellowships and scholarships are not subject to income tax and Social Security Tax. However, a portion of the award to graduate assistants may be subject to tax. The Graduate Office will supply detailed information.

*Members of the Duke University faculty will be granted only Non-Degree Admission to the Graduate School.

University Registration and Regulations

Undergraduate Registration

Preregistration

Each new student receives a copy of the *Academic Guide for Freshmen* and the *Bulletin of the School of Engineering* in the summer, and submits a trial course program for his first semester. All other students preregister for a given semester in the fall or spring of the year on the basis of information and advising available to them. Evidence that the continuing preregistration deposit of twenty-five dollars has been paid (see page 40 for detailed information) must be submitted at the time of spring preregistration. A student's tentative course program is filed for permanent record in the Central Records Office after each preregistration. He may complete his registration by mail. Students who preregister in either semester at a date later than that specified in the calendar of the colleges are subject to a penalty of $10.00, payable to the Treasurer. Students who do not preregister within an allotted time must be readmitted to the school by application to the Director of Admissions.

Semester Opening and Registration

Each preregistered undergraduate student is required to return to the University each semester on registration day and to report to his college

office by 6 p.m. Ample time should be allowed since failure to report entails loss of the continuing registration deposit and of registration in each class for which one is preregistered. An official enrollment is required for admission to any class.

After preregistration course changes may be made on registration day or during the first week of classes. Changes in courses for reasons not arising within the University entail a fee of $1.00.

Undergraduate Academic Regulations

Course Requirements

During each semester of the regular academic year, the academic program of an undergraduate student normally consists of five or six courses totaling 15-17 semester hours, exclusive of physical education. A maximum program of 19 semester hours exclusive of physical education has also been fixed since the University is committed to quality work and education that is not exclusively course centered. No student is allowed to take fewer than 14 semester hours of work without special permission from the Dean or to take more than the normal load of work unless his average grade in the preceding semester is higher than a C.

Course Audit

With the written consent of the instructor, a full-time, degree student is allowed to audit one or more courses in addition to the normal program with the consent of the appropriate instructor and the Registrar, Alumni may audit undergraduate courses at the usual auditing fee. After the first week of classes in any semester, no student classified as an auditor in a particular course may take the course for credit, and no student taking a particular course for credit may change classification to an auditor. A student may not repeat for credit any course he has previously audited. Auditors submit no daily work, take no examinations, and receive no credit for courses.

Course Changes

New courses may not be elected later than one week after the opening of classes during the semester. Procedures for withdrawal from a course are determined by each of the undergraduate colleges, but in any instance permission of the Dean is required.

Attendance Regulations

The attendance regulations specifically place the responsibility for class attendance upon the individual student. *He is expected to attend classes*

regularly and punctually. A student should recognize that one of the most vital aspects of a residential college experience is attendance in the classroom and that the value of this academic experience cannot be fully measured by testing procedures alone.

The members of the student body are considered sufficiently mature to appreciate the necessity of regular attendance, to accept this personal responsibility, and to demonstrate the kind of self-discipline essential for such performance and, conversely, to recognize and accept the consequences of failure to attend. An instructor is privileged to refer to the Dean for suitable action students who in his opinion are causing their work or that of the class to suffer because of absences or latenesses.

Absences from tests and required classes due to illness will be excused when certified by a proper medical official. Absences due to authorized representation of the University may be excused. Officials in charge of groups representing the University are required to submit names of those persons to be excused to the Dean's office 48 hours in advance of the hour when their absences are to commence.

Leave of Absence

An upperclassman in good standing may apply in writing to his dean for approval to take a leave of absence. If granted, the leave will begin at the end of the semester in which application is made and will last for one or two semesters. While on leave a student must inform his dean before November 1 (for a fall leave) or April 1 (for a spring leave) of his intention to return for the next semester. A student failing to meet the deadline will be considered to have withdrawn from the University and will have to apply for readmission.

Regulations for Participation in Athletics and Other Activities

Members of the athletic teams or other students groups engaging in public representation of the University are expected to be carrying their current work satisfactorily. Students may be barred from participation in such representation if, in the opinion the Dean, they fail to meet this requirement.

Grading

Final grades on performance in academic work are sent to students and parents, or guardians, after the examinations at the end of each semester. In addition, six-weeks advisory grade reports for freshmen are mailed each semester. Grade symbols are as follows:

Passing. A, exceptional; B, superior; C, average; and D, low pass. A passing grade may be modified by a plus (+) or a minus (—).

Failing. A grade of F indicates that the student has failed the course and that to receive credit for the course he must reregister for the course and repeat the work in class.

Pass-Fail Option for Elective Courses. With the consent of the instructor, a third or fourth year student may choose to be graded on a pass-fail basis in one free elective course each semester. A student accepted on this basis completes all the work of the course but receives either a pass (P) or fail (U) grade in lieu of a standard grade. The credit hours earned apply only in the total cumulative average, as do transfer and Advanced Placement credits. For that reason they are weighted as "C's" toward the required senior "C" average. A pass grade may not subsequently be converted to a regular letter grade nor may the course be retaken on a regular credit basis. After the first week of classes in any semester, no student classified as pass-fail in a particular course may change to regular registration and no student in regular registration may change classification to pass-fail.

Absence from the final examination. In all cases in which the student is absent from a final examination he receives an X instead of a final grade. If he does not present an acceptable explanation for his absence to the Dean's office within 48 hours after the scheduled time for the examination, the X is converted to an F. If the absence is excused by the Dean the student arranges with the Dean and the instructor for a make-up examination. An X not cleared by the end of the semester following the examination missed is converted to an F.

Incomplete work. If because of illness or other emergency a student's work in a course is incomplete, he may receive an I for the course instead of a final grade. Incomplete courses must be completed before the close of the succeeding semester; otherwise, the I is converted to an F and the course must be retaken if the student is to receive credit for it. In case a student whose work is incomplete is also absent from the final examination, he receives an X for the course.

Withdrawal. The letter W is used to indicate official withdrawal from a course. If a student drops a course without such permission, a grade of F is recorded for that course. If he drops with permission a course in which he is failing, the grade for that course is recorded as an F unless in the judgment of the Dean circumstances do not require this penalty but permit a notation of a W to indicate official withdrawal.

Credits

The unit of credit used is the semester hour, which signifies one class period a week throughout the semester. Two or three hours of laboratory work are equivalent to one hour of class work.

Seniors who at the beginning of a semester lack no more than nine hours for the fulfillment of the requirements for the B.S.E. degree may enroll, with permission of the Dean of the Graduate School, in graduate courses for a maximum total program of 15 semester hours.

Advanced Placement Course Credit

Any student who has earned a score of three or higher on an Advanced Placement examination of the CEEB and is approved for placement in a sophomore-level course or above may be considered for course credit in appropriate subjects. For those presenting scores of four or five the award of credit will be made automatically upon matriculation; for those presenting scores of three it will be determined with the approval of the University department concerned no earlier than at the end of the first semester. Course credit may be granted for one or two semesters in each subject area in which examination is offered in the Advanced Placement Program.

Transfer Credit

Transfer credit is evaluated from regionally accredited, degree-granting institutions. Courses taken away from Duke in which grades of less than C have been earned are not acceptable for transfer credit. Credit for work completed at other institutions will be determined in relation to the curriculum requirements of the college in which the student enrolls at Duke.

Credit for courses in science or language offered for advanced standing in any of the undergraduate colleges by a transfer student from a junior college will be evaluated by the departments concerned.

The maximum amount of credit acceptable from a junior college is 60 semester hours, exclusive of physical education. No credit is given for work completed by correspondence, and credit for no more than six semester hours is allowed for extension courses.

Residence Requirements

The final four semesters—or equivalent—of work must be earned in residence except in those instances in which a student has been approved to take his junior year abroad or been granted a leave of absence. For engineering students, 30 of these 60 semester hours must be from those normally taken in the senior year. Students who meet this requirement but who still lack six to eight semester hours in final fulfillment of requirements may take this work in another institution of approved standing, provided the course is approved by the Chairman of their major department and by the Dean.

Quality Points and Class Standing

An overall indication of the quality of student performance is provided by assigning quality points per semester hour of a course as follows:

Grade	*Quality Points*	*Grade*	*Quality Points*
A+	4.0	C+	2.3
A	4.0	C	2.0
A—	3.7	C—	1.7
B+	3.3	D+	1.3
B	3.0	D	1.0
B—	2.7	D—	1.0
		F	0

On the basis of these points there is maintained for engineering students a Duke cumulative average determined by dividing the number of quality points earned at Duke by the total number of hours carried (not semester hours passed) at Duke. No grade is entered on a student's permanent record in the case of transfer credit or Advanced Placement Program credit. All honors at Duke as well as continuation and graduation requirements are determined on the basis of the Duke cumulative average.

A student in the School of Engineering matriculating after September 1, 1965, must achieve at least the following for continuation from:

The first to the second year	18 s.h. credit and a q.p.r. of 1.3
The second to the third year	46 s.h. credit and a q.p.r. of 1.6
The third to the fourth year	74 s.h. credit and a q.p.r. of 1.7
The fourth to the fifth year (if needed)	102 s.h. credit and a q.p.r. of 1.8

Freshmen must also pass at least six semester hours of work in their first semester, three required courses in the second semester, and 18 semester hours in the first year; all other students must pass at least nine semester hours each semester. Physical education credits are excluded in each case.

Senior Class Privileges. Students who have completed 96 or more semester hours of work including certain specially designated junior courses are eligible for privileges normally accorded seniors.

Requirements for Graduation. For graduation from the School of Engineering, in addition to completion of an approved curriculum, a student matriculating after September 1, 1965, must meet at least the following minimum requirements: the completion of 134 semester hours; a cumulative q.p.r. of 1.90; and a q.p.r. of 2.0 in all work, as well as in all engineering work, taken after having attained senior standing.

Commencement

Degrees are awarded in June at commencement to those who have completed requirements at the end of either regular semester of the academic year. They are awarded at the end of the summer to students who complete degree requirements in a summer session.

Eligibility for Undergraduate Academic Honors

Dean's List

In recognition of academic achievement, students who earn an average quality point ratio of 3.0 or higher on a semester's work of not less than the minimum academic load are placed on the Dean's List.

Class Scholars

The five students in each combined undergraduate class of the University (including Trinity College, The Woman's College, and the School of Engineering) who achieve the highest quality point ratio on at least a normal course load for each academic year shall be designated Class Scholars.

Class Honors

To be eligible for Class Honors a student must earn, during the year, credit for at least the minimum academic load permitted by the college in which he is registered. Students in the freshman, sophomore, and junior classes who earn a 3.50 quality point ratio on all work for the year are eligible for Class Honors.

Graduation Honors

To be eligible for consideration for Graduation Honors a student must have completed in residence a minimum of ninety semester hours. Students who earn an average of at least a quality point ratio of 3.50 are recommended for a degree *magna cum laude.* Those who earn a quality point ratio of 3.75 are recommended for a degree *summa cum laude.*

Graduation with Departmental Distinction

Graduation with Distinction in Civil, Electrical, or Mechanical Engineering is awarded to the student who, in the opinion of the department

and of a special committee of the faculty, has demonstrated exceptional achievement in the area of his special interest.

Distinguished Professor Seminars

(See *Bulletin of Undergraduate Instruction* for description.)

Graduate Registration

The requirements regarding who must register are as follows: (1) All students who enter course work or residence for credit; (2) all students who have completed minimum requirements for an advanced degree, but continue to use the facilities of the University in their research; (3) all students in *in absentia* status; and (4) all students who wish merely to audit a course or courses.

Registration

After the applicant has received notification of his admission to the Graduate School and has returned his statement of acceptance of admission, he may present himself for registration. During the registration periods, announced in the Bulletin, he first confers with the Director of Graduate Studies of his major department, who prepares and signs a course card, listing the course work to be taken during the semester. The student then presents this course card to registration officials, who enroll him officially in his courses. After his first registration period as a current student he will pre-register at the stated times for pre-registration. Failure to pre-register incurs the penalty for late registration. Former students who intend to register to resume a degree program must give the Department and the Dean notice of this intention two months before registration.

Late Registration

All students are expected to register or pre-register at the times stated in the Bulletin. Those registering late are subject to a late registration fee of $10.00.

Change of Registration

During the academic year within a period of fourteen days from the registration date students may change registration with the approval of the Director of Graduate Studies, if no reduction of fee is involved, and with the approval of the Dean if reduction of fee is involved. Thereafter during the first thirty days from the registration date the only permissible

change is dropping course-seminar registration and adding equivalent units of research, with the approval of the Director of Graduate Studies, the instructor of the course, and the Dean of the Graduate School.

Normal Registration

A graduate student is designated as fully registered when he registers for the maximum credit his program requires. Required registration is set in consideration of the student's obligation to teach or assist and the stage he has reached in completion of degree requirements. In the *academic year* normal registration for the resident student who does not hold an appointment as a part-time instructor or assistant or does not engage in part-time work is 15 units a semester or 30 units an academic year. The normal registration for the student who holds such an appointment or undertakes such work is either 12 units or a minimum of 9, depending upon the number of hours a week he is required to devote to such duties.

The resident student in a terminal master's program carries a normal registration until he has met all requirements except for submitting his thesis. Thereafter, until submission of the thesis, he registers for 3 units a semester while in residence or, if he elects to go out of residence, for 1 unit *in absentia* each semester until the thesis is accepted.

The resident student engaged in a master's program which is not terminal but preparatory to a doctoral program registers as though he were a doctoral student.

The resident student in a doctoral program carries normal registration through the semester in which he passes the preliminary examination. If he remains in residence, he continues to register for a minimum of 3 units a semester until the dissertation is accepted. If, before or after passing the preliminary examination, he elects to go out of residence, he registers for 1 unit a semester *in absentia* in order to keep his program active.

It is necessary to be a fully registered student according to the regulations listed above (except when registered in absentia) in order to establish eligibility for library carrel and laboratory space, for student housing, for University and some outside loans, for Student Health service including the voluntary Walker plan coverage, and for reporting status for military duty.

The registration of 1 unit a semester in absentia provides occasional consultation with the thesis or dissertation supervisor. It may be waived for military duty or serious problems of health.

In the Summer Session 6 units a term is maximum registration. Students resident in the academic year who wish to continue study and use of University facilities including Summer Session Student Health during the summer must register for 1 unit in the first Summer Session term. This registration provides use of these facilities for both terms.

Regulations Governing Graduate Degrees

Work in the School of Engineering toward the degree of Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) is taken subject to the regulations of the Graduate School, as well as those of the School of Engineering.

Master of Science

Prerequisites

The degree of Master of Science is offered with a major in the fields of civil, electrical, and mechanical engineering. As prerequisites to this degree the student must have earned from an accredited college the Bachelor of Science in Engineering degree, or its equivalent, and completed a minimum of 12 semester hours work in the major field.

Residence Requirements

Although ideally graduate study consists principally of individual reading, research, and laboratory experimentation under guidance, academic progress in the United States is generally measured and recorded in terms of course hours and credits. Credit for courses and seminars, research, and residence, and corresponding tuition and fees are stated in terms of units. According to conventional measurement, one unit is equivalent to one semester hour. The term *residence* designates full-time study and research in close proximity to the facilities provided, as opposed to part-time study incidental to a full-time occupation. For purposes of satisfying the residence requirement of the various degrees, *residence* of one year is defined as two successive academic semsters of *no less* than nine units registration each semester.

Candidates for the Master of Science degree must spend, as a *minimum,* one full academic year, or its equivalent in residence at Duke University. If after completion of the 30-unit requirement the candidate remains in residence, he must register for a minimum of 3 units per semester.

A Master's candidate who in the academic year presents a thesis when not registered in residence will be charged 1 unit of residence for the semester in which the thesis is presented. (For regulations governing work taken or requirements completed during the Summer Session see the *Summer Session Bulletin.*)

Foreign Language

There is no foreign language requirement for this degree.

Major and Minor Subjects

The work for the Master of Science degree is designed to provide a broad foundation at the graduate level in the fields of civil, electrical, and mechanical engineering. The student must present acceptable grades for a minimum of 24 units of graduate courses: at least 12 in course work in his major area of concentration in engineering (not necessarily confined to the offerings of the engineering department in which the student is registered); a minimum of 6 units in a minor subject outside of engineering which lends broad support to his program (usually in the mathematical or natural sciences); and the remaining 6 of the 24-unit course requirement in either the major or minor subject, or in an area approved by the major department and by the Dean of Engineering. In addition to the 24-unit course requirement, the student must present a thesis, which carries a credit of 6 units.* Thus his earned credit for the degree totals a minimum of 30 units.

Candidacy for the Master of Science Degree

To be considered as a candidate for the Master of Science degree, the graduate student must (1) have made passing grades in all courses taken during the first period of residence (if he registers for fewer than 12 units of graduate courses during his first period of residence, he must make passing grades on the first 12 units of graduate courses), (2) have made a grade of G or E on at least 3 units of this work, and (3) have received the approval of the major department.

Time Limits for Completion of the Master of Science Degree

The candidate for the Master of Science degree who is in residence for consecutive academic years should complete all requirements for the degree within two calendar years from the date of his first registration in the Graduate School. Any candidate must complete all requirements within six calendar years of his first registration.

Course Load

A graduate student is considered fully registered when he enrolls for the maximum credit his program requires. Required registration is set in consideration of the student's obligation to teach or assist and the stage he has reached in fulfilling his degree requirements. In the *academic year* normal registration for the *resident doctoral student* who does not hold an appointment as part-time instructor or assistant or does not engage in part-time work is 15 units a semester or 30 units an academic year. The normal registration for the *resident doctoral student* who holds such an appointment or undertakes such work is either 12 units or a

*With the approval of the department, a master's degree candidate in Civil Engineering may choose, in lieu of thesis requirement, to complete six (6) additional units of course work plus a special project. If the candidate elects this alternative, he is expected to take a comprehensive examination over his graduate course work, and also to defend orally his special project.

minimum of 9 units, depending upon the number of hours a week he is required to devote to such duties. The *resident doctoral student* carries such normal registration through the semester in which he passes the preliminary examination. If he remains in residence, he continues to register for a minimum of 3 units a semester until the dissertation is accepted. If he elects to go out of residence, he registers for 1 unit a semester *in absentia* in order to keep his program active.

The *resident* student engaged in a *master's* program requiring a thesis registers as though he were a *resident doctoral student.* However, once he has completed all requirements except the thesis, he may reduce his registration to 3 units per semester. If he decides to go out of residence he registers for 1 unit *in absentia.* Regulations pertaining to a *resident* student engaged in a *master's* program requiring no thesis are identical to those described above for the doctoral student until the semester in which his course requirements will be satisfied. At that point, he may reduce his registration to the number of hours necessary for completion of his degree program.

In the Summer Session 6 units a term is maximum registration. Students resident in the academic year who wish to continue study and use of University facilities including Summer Session Student Health during the summer must register for 1 unit in the first Summer Session term. This registration provides use of these facilities for both terms.

The registration of 1 unit a semester *in absentia* provides occasional consultation with the thesis or dissertation supervisor. It may be waived for military duty or serious problems of health. Except in the semester in which a final examination is scheduled, every student is allowed two semesters of *in absentia* registration *without fee* provided that the student is a master's degree candidate who has completed his course and language requirements or is a doctoral candidate who has passed his preliminary examination. The student qualifying must register at the proper time each semester as "*in absentia*—no fee." The student who takes advantage of this provision while completing a master's program may not again claim it should he proceed into a doctoral program.

It is necessary to be a fully registered student according to the regulations listed above in order to establish eligibility for library carrel and laboratory space, for student housing, for University and some outside loans, for Student Health service benefits, and for reporting status for military duty.

The Thesis

The thesis should demonstrate the student's ability to collect, arrange, interpret, and report pertinent material on his special research problem.

Filing the Thesis Title. *On or before March 1 for a June degree* or on or *before July 1 for a September degree,* the student must file with the

Dean of the Graduate School, on the official form, the title of the thesis and declaration of intention to graduate. If degree requirements have been met before the deadlines above, the intention to graduate must be filed one month before the thesis is presented. The title must have the approval of the Director of Graduate Studies in the major department, and of the thesis supervisor.

Preparing the Thesis. All basic requirements for preparing the thesis are described in the *Manual of Style for Theses and Dissertations,* revised 1961, obtained at the Duke University Book Store, West Campus. The quality of paper, form, and binding are prescribed in the *Manual.*

Submitting the Thesis. Four typewritten copies of the thesis bound in snap binders secured through the Graduate School Office must be submitted in approved form to the Dean of the Graduate School on or before May 1 for a June degree or August 15 for a September degree and at least three days before the scheduled date of the student's examination. The copies will then be distributed to the several members of the examining committee. Two copies for the Library and one for the adviser will be bound by the Ruzicka Bindery, fee $5.00 a volume. The student will state whether or not he wishes more than three so bound.

The Examining Committee and the Examination

The instructor who directs the thesis appoints an examining committee composed of himself and two other members of the Graduate Faculty, one of whom must be from a department other than that of the major. If the student has been permitted to take related work *within* the major department, the third member may represent the minor field within the department. This committee is submitted for approval to the Dean of the Graduate School when the thesis is first presented.

The candidate appears before this committee for an examination which lasts for about one and one-half hours. The subject matter covered in the examination is usually restricted to the thesis and to the major field. If the candidate passes his examination, the examining committee certifies this fact by signing the title page of all copies of the thesis. The candidate then returns the original, the two carbon copies of the thesis, and any others he wishes bound by Ruzicka, to the Dean of the Graduate School, who deposits them in the University Library.

Doctor of Philosophy

The degree of Doctor of Philosophy is offered in the fields of civil, electrical, and mechanical engineering. It is essentially a research degree. The granting of the Ph.D. is based primarily upon the student's knowledge of a specialized field of study and upon the production of an acceptable dissertation embodying the results of original research. Although

course work is a necessary part of the student's program, the mere accumulation of course credits will not be sufficient for attaining this degree

Requirements for the Ph.D. Degree

The formal requirements, discussed in detail below, for the Ph.D degree are as follows: (1) foreign languages; (2) major and minor courses; (3) supervisory committee for program of study; (4) residence; (5) preliminary examination; (6) dissertation; (7) final examination. In order to be considered for candidacy for the Ph.D. degree, the student must have passed all of his course work in the first year of graduate study; on at least 9 units of course work he must have made a grade of G or better.

Foreign Languages. A reading knowledge of two acceptable foreign languages is required (normally two of the following: French, German, or Russian). A student working toward the doctoral degree should complete the language requirements for that degree at the earliest possible date.

Special courses designed to assist graduate students in acquiring a reading knowledge of French or German are offered for three hours a week, French during the fall semester, German during the spring semester and the Summer Session. A student who registers for either course must reduce his normal load of graduate courses by three units with no reduction in fees. *No auditors* are permitted in these courses at any time.

Major and Minor Subjects. The student must present acceptable grades for a minimum of 48 units of graduate courses: at least 24 in course work in his major area of concentration in engineering (not necessarily confined to the offerings of the engineering department in which the student is registered); a minimum of 12 units in a minor subject outside of engineering which lends broad support to his program (usually in the mathematical or natural sciences); and the remaining 12 of the 48-unit course requirement in either the major or minor subject, or in an area approved by the major department and by the Dean of the School of Engineering.

Residence. For students who first registered in September, 1959, or thereafter, the minimum registration requirement is 60 units of graduate credit not more than 30 units of which may be accepted by transfer. Since a full program is 30 units per academic year, the prospective Ph.D. candidate who enters with the B.S. degree must plan to spend in residence a minimum of two academic years; if he enters with the M.S. degree, his minimum residence is one academic year. If there are undergraduate deficiencies in his program, he may in addition to the minimum requirements be required to take preliminary undergraduate courses for which he will not receive graduate credit. Even if there are no such undergraduate deficiencies, the student's supervisory committee will determine what requirements, if any, above the minimum the student must meet.

For requirement of registration see Normal Registration.

Committee to Supervise the Program of Study

The Director of Graduate Studies of the major department will, during the first period of full-time registration of each doctoral aspirant, appoint a program advisory committee consisting of three members of the Graduate faculty in areas relevant to the student's intended major. This committee will guide the student in the initial stages of his program.

Not later than two months before the preliminary examination the Director of Graduate Studies in the major department will nominate for approval of the Dean of the Graduate School a supervisory committee of five, one being designated as chairman. This committee will include at least three members of the major department and one from the minor. This committee will draw up a program of study and administer the preliminary examination and, with such necessary changes as are approved, the final doctoral examination. The final examination may be administered with a minimum of four members.

When the preliminary examination is arranged, the committee and the Director will submit to the Dean of the Graduate School the student's program of study bearing a statement that the Department's course and language requirements have been or are being completed.

Time Limitations

1. At the time that the preliminary examination is passed any courses, language certifications, or other credits for advanced standing which are more than six calendar years old will not be accepted toward fulfilling the minimum requirements of the doctoral degree.

2. The student should normally pass the preliminary examination by the end of his second year of graduate study. If he has not passed it by the middle of the third year, he must file with the Dean of the Graduate School a statement explaining the delay and setting a date for the examination. Except under unusual circumstances, extension will not be granted beyond the end of the third year.

3. The doctoral dissertation should be submitted and accepted within two calendar years after the preliminary examination is passed. Should the dissertation not be submitted and accepted within four years after the examination, the candidate, with the approval of his committee, may petition the Dean of the Graduate School for an extension of one year. Should this extension be granted and the dissertation not be submitted and accepted within the year, the student to remain a candidate for the degree must pass a second preliminary examination. In such a case, the time limit for submitting the dissertation will be determined by the Dean of the Graduate School and the candidate's committee.

Credit for Summer Work

Credit earned in the Summer Session will not reduce the minimun required residence (see section on Residence Requirements).

Preliminary Examination

A student is not accepted as a candidate for the Ph.D. degree until h has passed the preliminary examination. A transfer student who may hav passed a preliminary examination elsewhere must nevertheless take th examination in this Graduate School. The examination ordinarily cover both the major and minor fields. The preliminary examination for student majoring in engineering must contain an oral component of ap proximately two hours' duration and may, at the discretion of the com mittee, include a written component.

In the summer, a preliminary examination may be scheduled onl between the opening and closing dates of the Summer Session.

Privilege of Re-Examination. Should the student fail the preliminar examination, he may apply, with the consent of his supervisory committe and of the Dean of the Graduate School, for the privilege of a secon examination to be taken no sooner than three months after the date of th first. Failure on the second examination will render the student ineligibl to continue his program for the Ph.D. degree at Duke University.

The Dissertation

The dissertation is expected to be a mature and competent piece o writing, embodying the results of significant and original research.

Filing Title. Not later than March 1 (March 2 if March 1 falls o Sunday) preceding the June commencement at which the degree i expected to be conferred, the student must file with the Dean of the Grad uate School, on the official form to be obtained from the Graduate Office the title of the dissertation. This title must receive the written approval o both the Director of Graduate Studies of the student's major departmen and the professor who directs the dissertation.

Form. The basic requirements for preparing the dissertation such a quality of paper, form, and binding are prescribed in the instructions fo microfilming (see below) and in the *Manual of Style for Theses and Dis sertations*, revised 1961, to be obtained from the Duke University Boo Store, West Campus.

Submitting Dissertation. The dissertation must be completed to th satisfaction of the instructor who directs it. Four typewritten copie bound in snap binders secured through the Graduate School Office mus be deposited with the Dean of the Graduate School on or before April 1 preceding the June commencement when the degree is to be conferred

The dissertation must be submitted to the Graduate Office at least seven days before the scheduled date of the student's examination.

Publication on Microfilm. All doctoral dissertations will normally be published on microfilm through University Microfilms, Ann Arbor, Michigan. Authors may, if they wish, also copyright them. The abstract will be published in Dissertation Abstracts. Before final typing is completed, the candidate should obtain in the Graduate Office detailed instructions on the procedure and the microfilming agreement.

In brief, all copies of the dissertation, the original in clean type, will remain unbound except for spring binders. Ten copies of an abstract carefully written and not more than 600 words long, are submitted when the dissertation is first presented to the Graduate Office. A nonreturnable dissertation fee of $25 is charged for microfilming. If copyright is desired, an additional fee is charged. The original copy and two carbon copies will be bound by the Ruzicka Bindery. The fee is $5.00 a volume. The student may request that more than the three copies be so bound.

Final Examination

The final oral examination shall be primarily on the dissertation. Questions may, however, be asked in the candidate's major field. Except in unusual circumstances approved by the Dean a final examination will not be scheduled when school is not in session.

If a student fails his final examination, he may be allowed to take it for a second time, but not sooner than six months from the date of his first. Permission to take the second examination must be obtained from the instructor who directed the dissertation and from the Dean of the Graduate School. Failure to pass the second examination renders the student ineligible to continue work for the Ph.D. degree at Duke University.

Deposit of the Dissertation. After the examination has been passed, the candidate brings to the Graduate Office the original and first two carbon copies of the dissertation, properly signed, and any other copies he wishes bound by Ruzicka. At this time he signs the microfilming agreement and pays such binding and copyright fees as are due.

Graduate Academic Regulations

Grades, Hours, and Credits

Although ideally graduate study is principally individual reading, research, and laboratory experimentation under guidance, academic progress in the United States is generally measured and recorded in terms of course hours and credits. The term *residence* designates full-time study

and research in close proximity to facilities provided for both as oppose to part-time study incidental to a full-time occupation. Here require residence of one year is defined as two successive academic semesters c not less than nine units registration each semester. Credit for courses an seminars, research, and residence, and corresponding tuition and fees ar stated in terms of units. According to conventional measurement one un is equivalent to one semester hour.

Credits Earned Outside this Graduate School

Graduate Credit Earned before the B.S.E. Degree is Granted. Ord narily no credit will be allowed for graduate courses earned before a stu dent has been awarded his B.S.E. degree. However, an undergraduat student at Duke University who, at the beginning of his final semeste lacks no more than 9 semester hours of fulfilling the requirements for th B.S.E. degree, may obtain permission from the Dean of the Graduat School to enroll for graduate courses sufficient to bring his total prograr to fifteen hours a week. Such graduate courses will be credited towar the M.S. degree, provided that the student meets the requirements fc admission to the Graduate School, and that he is duly registered in th Graduate School at the beginning of the final semester.

Under certain circumstances a maximum credit of 6 units may b allowed toward the M.S. degree for graduate courses completed elsc where. The acceptance of credit up to this amount, however, will nc reduce the minimum of required registration at Duke University. (Se below.) With the approval of both the student's major departmer and the Dean of the Graduate School, a student who is granted suc transfer credit may be permitted to register for as much as 12 units c thesis research instead of the usual 6 units. Or he may be permitted t fill out his schedule with as much as 6 units of further undergraduat training or 6 units of required language courses on the undergraduat level. In no case will credit be allowed for extension or correspondenc courses.

Under appropriate circumstances up to 30 units of graduate cred may be accepted toward the Ph.D. degree for students entering with th M.S. degree from another institution.

Transfer of Graduate Credits. Credit for graduate course work earne at another institution will be determined only after a student has spen one semester at Duke University. After completing his first semester, th student through his Director of Graduate Studies should file a reques that his credits be reviewed and a decision be made.

Reciprocal Agreement with the Consolidated University of North Car lina. Under a plan of cooperation between the University of Nort Carolina and Duke University, students regularly enrolled in the Graduat Schools of the University of North Carolina during the regular academi

year, and paying full fees to that institution, may be admitted to a maximum of two courses per semester in the Graduate School of Duke University upon payment of a nominal registration fee of two dollars and of any other special fees regularly required of all students. Under the same arrangements, students in the Graduate School of Duke University may be admitted to course work at the University of North Carolina. A similar arrangement is effective in the Summer Session. (See the *Summer Session Bulletin.*)

Grades

Grades in the Graduate School are as follows: E, G, S, F, and I. E (exceptional) is the highest mark. G (good) and S (satisfactory) are the remaining passing marks. F (failing) is below passing, and I (incomplete) indicates that some portion of the student's work is lacking, for an acceptable reason, at the time the grades are reported. The instructor who gives an I for a course specifies the date by which the student must have made up the deficiency, in no case more than one calendar year from the date the course ended. If the course is not completed, the grade of F is entered upon the student's record unless his appeal to the Dean for the grade No Credit is approved. The grade of Z indicates satisfactory progress at the end of the first semester of a two-semester course. It will be changed to whatever grade is appropriate upon the completion of the course. A grade of F in a major course normally occasions withdrawal from a degree program not later than the end of the ensuing semester or term; a grade of F in a minor course occasions academic probation.

Courses Primarily for Undergraduates

Students granted provisional admission and others whose preparation is found deficient may on occasion be required as part of their program to take undergraduate courses as prerequisites to continued graduate study. Undergraduate courses thus taken and others elected by the student will carry no graduate credit.

In exceptional cases, 100-level courses *outside the major department* may be taken for graduate credit to a maximum of two one-semester courses or one year-course not exceeding a total of 8 units, when approved by the Directors of Graduate Studies in the major department and in the department in which the course is listed and by the supervisor of the program.

Withdrawal and Interruption of Program

From a Course. For permissible changes during the first thirty days after the registration date, see Change of Registration, page 54. If a

course is dropped without the necessary approval, the permanent record will list the course as *Dropped Unofficially, F.* If a course is dropped after the thirty-day period, the status of the student at the time of withdrawal from the course will be determined and be indicated on the permanent record as *Withdrew Passing (WP)* or *Withdrew Failing (WF).*

From the Graduate School. The University reserves the right, and matriculation by the student is a concession of this right, to request the withdrawal of any student whose conduct at any time is not satisfactory to the University, even though no specific charge be made against the student. If a student wishes for any reason to withdraw from the Graduate School, he should notify both the Director of Graduate Studies in his major department and the Dean of the Graduate School prior to the date of his expected withdrawal. For withdrawal occasioned by academic failure, see above.

Students who find it necessary to interrupt their program of study for a period longer than a summer vacation should, before departure, leave with the Graduate Office a statement of the reason for interruption, mailing address, and expected date of return. If they are subject to registration *in absentia*, they should arrange for such registration before departure.

A foreign student who after successfully completing a minimum of one semester's graduate study must withdraw for the purpose of returning home before the completion of a graduate program may with the approval of his major department request the Dean to issue him a Certificate of Graduate Study.

Transcript

A student who wishes to transfer his credits from Duke University to another institution may request transcripts of his record. A minimum fee of one dollar, payable in advance, is charged for a single copy. Request should be directed to the Central Records Office; a charge of $.50 will be made for each additional copy on the same order.

Undergraduate Nonacademic Regulations

Conduct and Discipline

The University expects of its students loyal and hearty cooperation in developing and maintaining high standards of conduct as well as of scholarship. General University regulations concerning conduct of students are made available to students when admission is offered, or upon request. The student in accepting admission indicates his willingness to

subscribe to those regulations. The University reserves the right, and matriculation by the student is a concession of this right, to ask the withdrawal of any student whose conduct at any time is not satisfactory to the University, even though no specific charge may be made against the student.

General oversight of the conduct of students and the administering of discipline are under the supervision of appropriate deans. Immediate supervision is entrusted to the Dean of Men and the Dean of Women. However, through the expressed willingness of the students of the University to assume the responsibility of maintaining high standards of morality, the student body has become to a great degree self-governing. Two councils, one of men and the other of women, each composed of duly elected representatives of the student body, exercise the authority granted the students by their respective colleges to investigate all cases of misconduct, as well as all other cases of violation of proper standards and traditions, and to make recommendations of penalities based on their finding. They exert a guiding and stimulating influence for the promotion of high ideals of conduct among students.

For more complete information, see *Bulletin of Information and Regulations, Trinity College/the School of Engineering.*



Application of strain gages to shell model

Courses of Instruction

Undergraduate Engineering Non-Departmental Course

Dean Meriam; Associate Dean Kraybill

Egr 1. *Engineering Design I.* 2 s.h. *Lewis, Linderoth, Shepard, an Warner*

Egr 2. *Engineering Design II.* Prerequisite: Math 51. 2 s.h. *Lew and Linderoth*

Egr 23. *Statics.* Corequisite: Math 22. 3 s.h. *Arges, Dvorak, Nas Palmer, and Wilson*

Egr 53. *Engineering Design III.* Prerequisite: Math 22. 2 s.h. *Bu zard, Macduff, and Wright*

Egr 63. *Introductory Electric Systems I.* Corequisites: Math 63 an Phys 51. 4 s.h. *Meier, Thurstone, and Wells*

Egr 73. *Mechanics of Deformable Bodies.* Prerequisite: Egr 23. 3 s. *Arges and Palmer*

Egr 83. *Structure and Properties of Solids.* Prerequisite: Chem Corequisites: Math 63 and Egr 73. 3 s.h. *Pearsall and Shepard*

Egr 101. *Thermodynamics.* Prerequisites: Chem 2 and Phys 52. 3 s. *Elsevier, Harman, Kenyon, and Shepard*

Egr 113. *Introductory Electric Systems II.* 3 s.h. *Pilkington and Wel*

Egr 123. *Dynamics.* Prerequisites: Egr 23, Math 63, and Phys 51. 3 s.h. *Nash, Palmer, J. F. Wilson, and Wright*

Egr 133. *Heat Transfer.* Prerequisite: Math 63. Corequisite: Egr 101. 2 s.h. *Chaddock and Werner*

Egr 143. *Fluid Mechanics.* Prerequisite: Math 63. Corequisite: Egr 123. 2 s.h. *Muga*

Egr 163. *Fields.* Prerequisite: Math 111. Corequisites: Egr 113, 123, 133, and 143. 3 s.h. *George and Thurstone*

Egr 169.* *Legal Aspects of Engineering.* Open to seniors only. 3 s.h. *Olive*

Egr 170.* *Patent Law for Engineers.* Open to seniors only. 3 s.h. *Olive*

Civil Engineering

Undergraduate Courses

Professor Vesić, *Chairman*; Professor Bryan, *Director of Undergraduate Studies*

CE 96. *Geodetic and Location Measurements.* Prerequisite: Egr 53. 3 s.h. *Sheppard*

CE 110.* *Plane Surveying.* Prerequisites: Egr 53 and Math 51. 3 s.h. *Sheppard*

CE 116. *Transportation Engineering.* Concurrent: CE 96. 3 s.h. *Staff*

CE 118. *Materials of Construction.* Prerequisites: Egr 73 and 83. 2 s.h. *Arges*

CE 123. *Hydraulic Engineering.* Prerequisite: Egr 143. 3 s.h. *Muga*

CE 124. *Sanitary Engineering.* Prerequisite: CE 123 or consent of instructor for non-civil-engineering students. 3 s.h. *Bryan*

CE 126.* *Sanitary Engineering Design.* Prerequisite: CE 124. 3 s.h. *Bryan*

CE 131. *Structural Mechanics I.* Prerequisites: Egr 73 and Math 63. 3 s.h. *Brown*

CE 133. *Structural Design I.* Prerequisite: Egr 73. Concurrent: CE 131. 3 s.h. *Palmer*

CE 134. *Structural Design II.* Prerequisite: CE 131. 3 s.h. *Palmer*

CE 139. *Introduction to Soil Mechanics.* Prerequisites: Egr 73 and 83, and CE 123. 3 s.h. *Vesić*

CE 140.* *Structural Mechanics II.* Prerequisite: CE 131. 3 s.h. *Brown*

CE 143, 144.* *Projects in Civil Engineering.* Permission for enrollment should be secured from the Director of Undergraduate Studies, with the

* Offered only upon sufficient demand; enrollment limited.

approval of the student adviser and the professor under whom the project will be undertaken. 1-6 s.h.

CE 146.* *Professional Engineering.* Prerequisite: Senior standing. 2 s.h. *Palmer*

CE 150. *Engineering Systems Analysis.* Prerequisite: Senior standing. 2 s.h.

*Graduate Courses**

Professor Vesić, *Chairman and Director of Graduate Studies*; Professors Brown, Bryan, Lash, and Meriam; Associate Professors Hill and Kumar; Assistant Professors Dvorak, Muga, and Wilson

CE 201. *Advanced Mechanics of Materials.* 3 units. *Hill*

CE 202. *Experimental Mechanics.* 3 units. *Wilson and Dvorak*

CE 204. *Plates and Shells.* Prerequisite: CE 201. 3 units. *Hill*

CE 205. *Elasticity.* Prerequisite: CE 201. 3 units. *Dvorak*

CE 209. *Advanced Structural Dynamics.* Prerequisite: ME 203. 3 units. *Wilson*

CE 211. *Mechanical Behavior of Materials.* Corequisite: CE 201. 3 units. *Kumar*

CE 212. *Structural Materials.* Prerequisite: CE 211. 3 units. *Dvorak and Kumar*

CE 221. *Incompressible Fluid Flow.* 3 units. *Muga*

CE 222. *Open Channel Flow.* 3 units. *Muga*

CE 223. *Flow Through Porous Media.* 3 units. *Muga*

CE 224. *Coastal and Tidal Hydraulics.* 3 units. *Muga*

CE 225. *Engineering Hydrology.* 3 units. *Bryan and Muga*

CE 231. *Structural Engineering Analysis.* 3 units. *Brown*

CE 232. *Reinforced Concrete Design.* 3 units. *Brown*

CE 233. *Prestressed Concrete Design.* 3 units. *Brown*

CE 234. *Structural Design in Metals.* 3 units. *Palmer*

CE 235. *Foundation Engineering.* 3 units. *Vesić*

CE 236. *Earth Structures.* 3 units. *Vesić*

CE 243, 244. *Sanitary Engineering Unit Operations and Process Design* 6 units. *Bryan*

CE 250. *Engineering Analysis.* 3 units. *Wilson*

CE 303. *Elastic Stability.* Prerequisite: CE 201. 3 units.

CE 304. *Advanced Plates and Shells.* Prerequisite: CE 204. 3 units *Hill*

CE 305. *Advanced Elasticity.* Prerequisites: CE 205 and Math 286 3 units. *Dvorak*

CE 306. *Plasticity.* Prerequisites: CE 205 and 211. 3 units. *Wilson*

CE 307. *Viscoelasticity.* Prerequisite: CE 205. 3 units. *Dvorak*

* Offered only upon sufficient demand; enrollment limited.

CE 321. *Mechanics of Ideal Fluids.* Prerequisite: Math 286. 3 units. *Muga*

CE 331, 332. *Advanced Structural Design and Analysis.* Prerequisite: CE 231. 6 units. *Hill and Lash*

CE 335. *Mechanical Behavior of Soils.* 4 units. *Vesić*

CE 336. *Advanced Soil Mechanics.* Prerequisite: CE 335. 4 units. *Vesić*

CE 337. *Elements of Soil Dynamics.* Prerequisite: CE 335 or consent of instructor. 3 units. *Vesić*

CE 365. *Advanced Topics in Civil Engineering.* 1 to 3 units. *Members of the Graduate Staff*

CE 399. *Special Readings in Civil Engineering.* Prerequisite: approval of the Director of Graduate Studies. 1 to 3 units. *Members of the Graduate Staff*

Electrical Engineering

Undergraduate Courses

Professor Owen, *Chairman*; Professor Meier, *Director of Undergraduate Studies*

EE 161. *Electronics and Signals.* Prerequisite: Egr 113. 3 s.h. *Owen and Wilson*

EE 162. *Electromechanical Energy Conversion.* Prerequisites: Egr 113, 123, and 163. 2 s.h. *Trickey and Wilson*

EE 163. *Physical Electronics.* Prerequisites: Egr 163 and Phys 161. Corequisite: EE 164. 3 s.h. *Hacker and Joines*

EE 164. *Electromagnetic Fields and Waves.* Prerequisite: Egr 163. 3 s.h. *Kerr and Wang*

EE 167. *Design Colloquium.* 2 s.h. *Meier*

EE 173-174.° *Projects in Electrical Engineering.* 1-6 s.h. *Staff*

EE 185. *Pulse and Digital Electronics.* Prerequisite: EE 161. 3 s.h. *George*

EE 186. *Modulation Systems and Noise.* Prerequisite: EE 161. Selected laboratory work. 3 s.h. *Nolte*

EE 187. *Electronic Processes in Materials.* Prerequisite: EE 163. 3 s.h. *Hacker*

EE 188. *Dynamics of Electromechanical Energy Conversion.* Prerequisite: EE 162. 3 s.h. *Trickey*

EE 195.° *Nuclear Engineering Fundamentals.* Prerequisite: permission of instructor. 3 s.h. *Wortman*

° Offered only upon sufficient demand; enrollment limited.

EE 196. *Microwaves and Quantum Electronics.* Prerequisite: EE 164. 3 s.h. *Joines*

EE 199.* *Linear Feedback Systems.* Prerequisite: permission of instructor. 3 s.h. *Wells*

*Graduate Courses**

Professor Owen, *Chairman*; Professor Kerr, *Director of Graduate Studies*; Professors Artley, Meier, Trickey (Visiting), and Wilson; Associate Professors Burger (Adjunct), Hacker, Joines, Marinos, Nolte, Pilkington, Thurstone, and Wells; Assistant Professors George and Wang

EE 203. *Random Signals and Noise.* 3 units. (Fall semester.) *Nolte and Owen*

EE 204. *Information Theory and Communication Systems.* Prerequisite EE 203. 3 units. (Spring semesters 1970, 1972.) *Kerr and Nolte*

EE 205. *Signal Detection and Extraction Theory.* Prerequisite: EE 203 or permission of instructor. 3 units. (Spring semesters 1969, 1971.) *Nolte*

EE 207. *Introduction to the Theory and Design of Switching Networks.* Prerequisite: permission of instructor. 3 units. Fall Semesters. *George and Marinos*

EE 208. *Digital Computer Design.* Prerequisite: EE 207 or permission of instructor. 3 units. (Spring semester 1969, 1971.) *Owen and Marinos*

EE 211. *Solid State Theory.* Prerequisite: permission of instructor. 3 units. (Fall semester.) *George and Hacker*

EE 212. *Solid State Materials.* Prerequisite: EE 211. 3 units. (Spring semesters 1970, 1972.) *Hacker*

EE 213. *Principles of Magnetism.* Prerequisite: EE 211 or permission of instructor. 3 units. (Spring semesters 1969, 1971.) *Artley and Hacker*

EE 215. *Semiconductor Physics.* Prerequisite: EE 211 or permission of instructor. 3 units. *Hacker*

EE 217. *Masers.* Prerequisite: permission of instructor. 3 units. (Spring semesters 1969, 1971.) *George*

EE 222. *Nonlinear Analysis.* Prerequisite: permission of instructor. 3 units. (Fall semester.) *Wilson*

EE 225. *Semiconductor Electronic Circuits.* Prerequisite: permission of instructor. 3 units. (Spring semester.) *Joines and Owen*

EE 227. *Network Synthesis.* Prerequisite: permission of instructor. 3 units. (Fall semesters 1968, 1970.) *George and Marinos*

EE 241. *Linear Control Systems.* Prerequisite: permission of instructor. Credit not given for both EE 199 and EE 241. 3 units. (Fall semester.) *Wells*

* Offered only upon sufficient demand; enrollment limited.

EE 244. *Selected Topics in Control Systems.* Prerequisite: EE 203 and either EE 199 or EE 241. 3 units. (Spring semesters 1970, 1972.) *Wells*

EE 259. *Advanced Electric Energy Conversion.* Prerequisite: permission of instructor. 3 units. *Trickey*

EE 265. *Advanced Topics in Electrical Engineering.* Prerequisite: approval of the Director of Graduate Studies and of instructor under whom work will be done. 1 to 3 units. *Staff*

EE 271. *Electromagnetic Theory.* Prerequisite: permission of instructor. 3 units. (Fall semester.) *Joines*

EE 272. *Application of Electromagnetic Theory.* Prerequisite: EE 271. 3 units. (Spring semesters 1970, 1972.) *Joines*

EE 304. *Advanced Statistical Analysis and System Design.* Prerequisite: EE 203. 3 units. (Spring semesters 1970, 1972.) *Kerr*

EE 307. *Advanced Digital Systems—I.* Prerequisite: EE 207 or permission of instructor. 3 units. (Fall semesters 1969, 1971.) *Marinos*

EE 308. *Advanced Digital Systems—II.* Prerequisite: EE 307 or permission of instructor. 3 units. (Spring semesters 1970, 1972.) *Marinos*

EE 311. *Quantum Theory of Materials.* Prerequisites: EE 211 and Physics 316. 3 units. *Pilkington*

EE 313. *Magnetic Processes in Materials.* Prerequisite: EE 213, or permission of instructor. 3 units. (Fall semesters 1969, 1971.) *Artley*

EE 315. *Semiconductor Devices.* Prerequisite: EE 215. 3 units. *Hacker*

EE 321. *Nonlinear Magnetic and Semiconductor Circuits.* Prerequisite: permission of instructor. 3 units. (Spring semesters 1969, 1971.) *Wilson*

EE 324. *Nonlinear Oscillations in Physical Systems.* Prerequisite: EE 222. 3 units. (Spring semesters 1970, 1972.) *Wilson*

EE 342. *Introduction to Optimal Control Theory.* Prerequisite: permission of instructor. 3 units. (Spring semesters 1969, 1971.) *Wang*

EE 361, 362. *Electrical Engineering Seminar.* Although this course carries no graduate credit, it is expected that each graduate student will participate in the seminar for at least two semesters while in residence at Duke University. (Fall and spring semesters.) *Nolte*

EE 371. *Advanced Electromagnetic Theory.* Prerequisite: EE 272. 3 units. *Pilkington*

EE 373. *Selected Topics in Field Theory.* Prerequisite: EE 272. 3 units. *Artley*

EE 375. *Interaction of Electron Beams and Waves.* Prerequisite: EE 272. 3 units. (Fall semesters 1969, 1971.) *George*

EE 399. *Special Readings in Electrical Engineering.* Prerequisite: approval of the Director of Graduate Studies. 1-3 units. *Staff*

Undergraduate Courses

Professor Chaddock, *Chairman*; Professor Kenyon, *Director of Undergraduate Studies*

ME 102. *Thermodynamics II.* Prerequisite: Egr 101. 3 s.h. *Elsevier*

ME 111. *Physical Metallurgy.* Prerequisite: Egr 83. 3 s.h. *Shepard*

ME 112. *Polymer Science.* Prerequisite: Egr 83. 3 s.h. *Pearsall*

ME 122. *Transport Phenomena.* Prerequisites: Egr 133, Egr 143, and Math 111. 3 s.h. *Chaddock and Werner*

ME 128.* *Dynamics of Gases.* Prerequisite: ME 102. 3 s.h. *Buzzard*

ME 133. *Mechanical Design I.* Prerequisite: Math 63. Concurrent: Egr 123. 3 s.h. *Nash*

ME 134. *Mechanical Design II.* Prerequisite: ME 133. 2 s.h. *Linderoth*

ME 135.* *Vibration Control.* Prerequisites: Math 63 and ME 133. 3 s.h. *Macduff*

ME 136. *Response of Systems.* Concurrent: Math 111. 3 s.h. *Macduff*

ME 153.* *Heating, Air Conditioning, and Refrigeration.* Prerequisites: Egr 133 and 143 and ME 102. 3 s.h. *Elsevier*

ME 156.* *Combustion Engines.* Prerequisite: ME 102. 3 s.h. *Elsevier*

ME 161. *Mechanical Engineering Laboratory.* Prerequisite: senior standing. 2 s.h. *Buzzard*

ME 165-166. *Special Topics in Mechanical Engineering.* Prerequisite: permission of the instructor and Director of Undergraduate Studies. 1-3 s.h. *Staff*

ME 167.* *Industrial Engineering.* Prerequisite: senior standing. 3 s.h. *Lewis*

ME 172.* *Kinematics of Mechanisms.* Prerequisite: ME 133. 3 s.h. *Nash*

ME 177.* *Computer Techniques for Simulation and Design.* 3 s.h. *Wright*

ME 182.* *Fundamentals of Nuclear Engineering.* Prerequisite: permission of instructor. 3 s.h. *Kenyon*

ME 183.* *Power Plants.* Prerequisite: ME 102. 3 s.h. *Kenyon*

ME 197-198. *Projects in Mechanical Engineering.* Prerequisite: 3.0 average and senior standing. 1-6 s.h. *Staff*

* Offered only upon sufficient demand; enrollment limited.

*Graduate Courses**

Professor Chaddock, *Chairman*; Professor Pearsall, *Director of Graduate Studies*; Professors Kenyon, Linderoth, Macduff, and Meriam; Associate Professors Clark, Elsevier, Harman, and Murray (Adjunct); Assistant Professors Buzzard, Shepard, Werner and Wright

ME 202. *Theoretical Thermodynamics.* 3 units. *Elsevier and Harman*

ME 203. *Introduction to Advanced Mechanics.* 3 units. *Macduff and Meriam*

ME 211. *Theoretical and Applied Polymer Science.* 3 units. *Pearsall*

ME 221. *Compressible Fluid Flow.* 3 units. *Harman and Werner*

ME 222. *Heat Transfer.* 3 units. *Chaddock and Werner*

ME 226. *Intermediate Fluid Mechanics.* Prerequisite: Egr 143. 3 units. *Buzzard*

ME 231. *Systems Response and Control.* 3 units. *Macduff and Wright*

ME 233. *Fluid Control Systems.* 3 units. *Macduff*

ME 235. *Advanced Mechanical Vibrations.* 3 units. *Macduff*

ME 251. *Refrigeration and Cryogenics.* 3 units. *Chaddock*

ME 255. *Energy Conversion.* 3 units. *Harman*

ME 265. *Advanced Topics in Mechanical Engineering.* Prerequisites: Approval of the Director of Graduate Studies and the instructor under whom work will be done. 1 to 3 units. *Members of the graduate staff*

ME 270. *Theory of Lubrication and Bearing Design.* 3 units. *Linderoth*

ME 280. *Nuclear Reactor Power Cycles.* 3 units. *Kenyon*

ME 302. *Advanced Thermodynamics.* 3 units. *Harman*

ME 311. *Behavior of Crystalline Solids.* 3 units. *Pearsall and Shepard*

ME 322. *Mechanics of Viscous Fluids.* 3 units. *Buzzard*

ME 323. *Convective Heat Transfer.* Prerequisites: Math 285, ME 222 or equivalent. 3 units. *Chaddock.*

ME 372. *Finite Element Techniques in Design.* 3 units. *Macduff*

Biomedical Engineering

*Undergraduate Courses**

Professor Pilkington, *Chairman of Division of Biomedical Engineering*

BME 191-192. *Projects in Biomedical Engineering.* 1-6 s.h. *Staff*

*Graduate Courses**

Professor Pilkington, *Chairman*; Professor Moore; Associate Professors Clark and Thurstone; Assistant Professors Hammond and Wachtel

BME 201. *Introductory Biomedical Engineering.* 3 units. *Wachtel and Pilkington*

* Offered only upon sufficient demand; enrollment limited.

BME 202. *Introductory Biomedical Engineering II.* Prerequisite: BME 201. 3 units. *Thurstone, Clark, and Hills*

BME 265. *Advanced Topics in Biomedical Engineering.* Prerequisite: approval of the chairman and the instructor under whom work will be done. 1-3 units. *Staff*

Non-Engineering Subjects in Core Curricula

Chem 1, 2. *General Inorganic Chemistry.* Prerequisite: qualification for Math 21. 8 s.h.

Engl 1-2. *Freshman Composition.* 6 s.h.

Math 21, 22. *Introductory Calculus.* Prerequisite: three units of college preparatory mathematics. Math 21 is prerequisite for Math 22. 6 s.h.

Math 51. *Introduction to Digital Computation.* Prerequisite: three units of college preparatory mathematics 3 s.h.

Math 63. *Intermediate Calculus.* Prerequisite: Math 22. 3 s.h.

Math 111. *Applied Mathematical Analysis I.* Not open to students who have had Math 131. Prerequisite: Math 63. 3 s.h.

Math 112. *Applied Mathematical Analysis II.* Prerequisite: Math 63. 3 s.h.

Phys 51-52. *General Physics.* Not open for credit to students who have completed Physics 1-2 or 41-42. Students planning to major in physics should enroll in Physics 41-42 in their freshman year. Prerequisites: Mathematics 21, 22, or equivalent (may be taken concurrently). 8 s.h.

Phys 161. *Modern Physics.* Prerequisites: Phys 51-52 and Math 22. Phys 161 is prerequisite for 162. 6 s.h.

For additional non-engineering courses consult the *Bulletin of Undergraduate Instruction.*

Recommended Minor Subjects for Graduate Students

Chem 151, 152. *Organic Chemistry.* Prerequisite: Chem 42 or 61. Chem 151 is prerequisite for 152. 8 units.

Math 221, 222. *Numerical Analysis.* Prerequisite: Math 63 for 221 and 221 for 222. 6 units.

Math 283. *Applied Mathematical Statistics.* Prerequisite: Math 63. 3 units.

Math 284. *Least Squares Analysis of Linear Models.* Prerequisite: Math 136 or 283. 3 units.

Math 285. *Applied Mathematical Methods I.* Prerequisite: Math 63. 3 units.

Math 286. *Applied Mathematical Methods II.* Prerequisite: Math 63. 3 units.

* Offered only upon sufficient demand; enrollment limited.

Math 289. *Applications of Stochastic Processes I.* Prerequisite: Math 135 and 140, or consent of instructor. 3 units.

Math 290. *Applications of Stochastic Processes II.* Prerequisite: Math 289 or consent of the instructor. 3 units.

Math 291-292. *Analysis I, II.* Prerequisite: Math 218 or 140, or consent of the instructor. 6 units.

M374. *Cellular Neurophysiology.* 2 units.

M377. *Cellular Transport Processes.* 2 units.

Phys 221, 222. *Theoretical Physics.* Prerequisite: Math 285, 286 or equivalent to be taken at least concurrently. 6 units.

Z 252. *Comparative Physiology.* Prerequisite: Zoology 151 or equivalent. 4 units.

For additional courses consult the *Bulletin of The Graduate School.*

The School of Forestry



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General Information

Duke and the School of Forestry

Duke University, located at Durham, North Carolina, comprises Trinity College, The Woman's College, the School of Engineering, the Graduate School, and the professional schools of Forestry, Divinity, Law, Medicine, and Nursing. The University dates from 1838, when Union Institute was founded in Randolph County by the Methodists and Friends. In 1851 the institution became Normal College, one of the first schools in America for the training of teachers. In 1859 the name was changed to Trinity College and so continued until 1924, when the College became a part of Duke University.

By virtue of an indenture of trust, executed December 11, 1924, by James Buchanan Duke, a great benefaction was placed at the disposal of humanity by providing for hospitalization, church work in rural communities, and education. The principal feature of the educational provision was the creation of Duke University.

The University, with a student body totaling 8,000 occupies two campuses. The Woman's College campus of 108 acres was formerly the campus of Trinity College. About a mile west are the newer units of the University, known as the West Campus, totaling 467 acres. It was first occupied in September, 1930.

Forestry at Duke University began early in 1931 when the Duke Forest was placed under intensive forest management and forestry

research was initiated. An academic-forestry curriculum, designed f men and women intent upon pursuing the study of forestry as a profe sion, was organized in Trinity College of Duke University in 1932. Th program was enlarged in 1952 and now includes more than 60 c operating colleges and universities. (See pages 16-20).

In 1938 the School of Forestry was organized at the graduate lev and a curriculum was offered leading to the degree Master of Forestr Work leading to the degree of Doctor of Forestry has been offered sinc 1940. The School has been fully accredited since its origin. A degre in forestry at the undergraduate level is not offered at Duke University.

Graduates of recognized colleges and universities, and professiona schools of forestry, and other students who meet the entrance requir ments of the School (see page 29), may enroll for training in forestry lea ing to the professional degrees, Master of Forestry and Doctor of Forestr The Department of Forestry in the Graduate School also offers gradua work in certain aspects of forestry leading to the degrees Master Science and Doctor of Philosophy. This work is available to graduat of schools of forestry of recognized standing, and to college or universit graduates holding a Bachelor's degree.

Students taking undergraduate work and who are planning to matri ulate in the School for programs of study leading to the degrees Maste of Forestry or Doctor of Forestry should refer to the section in this an nouncement (page 29) where entrance requirements are presented.

Courses of Study and Requirements for Degrees

Basic science or professional programs of study are available in the ollowing fields of forestry and related natural resources. Interdisciplin-ry programs between fields within the School of Forestry and those in ther departments of the University also are possible and strongly en-ouraged.

IOLOGICAL SCIENCE

orest Ecology
ree Physiology and Biochemistry
orest Pathology
orest Entomology
endrology and Wood Anatomy

TATISTICS AND OPERATIONS RESEARCH

iometry and Statistics
ensuration
perations Research

ENVIRONMENTAL SCIENCE

Forest Soils
Forest Meteorology and Biometeorology
Wildland Hydrology

ECONOMICS AND MANAGEMENT

Natural Resources Economics and Policy
Forest Management

With the exception of forest management, study in all of the above lds can be pursued in programs for a M.S., A.M., or Ph.D. degree in the

Department of Forestry of the Graduate School, or in a professional pro gram for a M.F. or D.F. degree from the School of Forestry. Work i forest management is limited to the professional M.F. and D.F. degre programs in the School of Forestry. Students contemplating careers i teaching and research are strongly urged to follow courses of study i the Department of Forestry in the Graduate School.

In addition, the following special management or business-oriente programs of study leading to the M.F. degree are available in the Schoo of Forestry:

Post Liberal Arts and Science Program
Business Management Program
Forest Protection Program
Academic-Forestry Program

Detailed information on these special programs is given under th Master of Forestry Degree and the Cooperative Plan of Study sections o this catalog.

Courses available in the various fields of Forestry and related Natura Resources are indicated in a later section of this catalog.

Master of Forestry Degree

The requirements for the degree of Master of Forestry (M.F.) ar governed by the extent of the student's previous professional training Normally, students who have earned the degree of Bachelor of Scienc in Forestry, or equivalent, from an accredited school of forestry may com plete the requirements for the M.F. degree in one academic year. Stu dents who have had no prior professional training in forestry are require to complete five semesters of resident study. Graduate work of equivalen grade done in residence at other institutions may, with the approval o the Faculty, be accepted as credit toward the degree, but a minimun of one year of residence at Duke University is required.

The submission of a thesis for the M.F. degree usually is required. Wit the approval of the Faculty, an acceptable report on a special study ma be submitted in lieu of a thesis, credit for which will not exceed thre units. Four copies of the thesis, typewritten and bound in accordanc with regulations set forth by the Faculty, must be deposited with th Dean of the School of Forestry on or before May 15 of the academic yea in which the student expects to obtain the M.F. degree.

A student who has not completed his thesis while in residence mus submit an acceptable manuscript to the faculty within a period of tw years following the termination of his residence.

No student may take less than fourteen nor more than eighteen units o credit per semester without special permission of the Faculty.

ost-Professional Program

Students with satisfactory undergraduate professional training qualify)r advanced study and research in the various disciplines of forestry nder this program. A specific study plan is developed for each student rough consultation with a faculty advisory committee. For the student lanning a managerial career in the general area of forest production or forest products technology (and where the Master of Forestry is lanned as a terminal degree), these study plans usually consist of)urses and seminars with a major portion of the work concentrated in the eas of the student's interests. For the student with research interest, the udy plan is oriented within the subject matter field of interest toward ie furtherance of a research career, or toward preparing him for aca-emic training beyond the master's level.

A number of senior-graduate courses offered in other departments of ie University are open to qualified students in the School of Forestry.)ne or more of these may be included in a student's study plan when eemed advisable by his advisory committee.

A minimum of thirty units, in which the student must earn a grade of or G in at least six units, are required for the degree, Master of orestry, under this program. Normally, 15 units of credit (including iesis) must be earned in the School of Forestry.

ost-Liberal Arts and Science Program

Men and women who are college graduates but also have had no prior rofessional training are admitted to programs of study leading to the ttainment of the degree, Master of Forestry. A minimum of five emesters of work in residence is usually required including the core)urses listed below.

These courses are normally completed during the first year of resi-ence. However, students lacking prerequisites for specific courses may ostpone such courses until the necessary prerequisites have been com-leted.

Core Courses

	units
ree Physiology (For. 201)	3
orest Soils (For. 261)	3
esource Economics and Policy (For. 269)	3
dentification of American Trees and Their Timbers (For. 249)	3
orest Measurements (For. 256)	4
eneral Meterology (For. 203)	3
orest Ecology (For. 243)	3
omputer Science in Natural Resources (For. 253)	1
iometry (For. 250)	3

Biology of Forest Insects and Diseases (For. 222)	4
Analytical Techniques in Forest Utilization (For. 210)	3
Careers in Natural Resources (For. 200)	0

During the latter part of the first year each student will be requested to designate the subject matter field (or fields) he wishes to pursue for a major. After the student has designated his field of interest, he will be assigned a faculty advisor who, in consultation with the student, will develop a program of study in a manner similar to that described under the Post-Professional Program (see page 5).

Any student who does not earn a grade of E or G in at least six hours of work in the first academic year will not be permitted to enter into the work of the second year.

Business Management Program

A specialized program is offered in the School of Forestry, in cooperation with the Departments of Economics and Business Administration, to prepare forestry graduates for managerial careers in the business aspects of industrial forest land management or forest products. The program requires two years of study and training leading to the degree Master of Forestry. It is open to selected students who have earned a Bachelor's Degree (or equivalent) in general forestry, forest management, forest utilization, or wood science and technology, with the proper prerequisites and who have potential leadership qualities indicative of administrative and executive capacity.

The general requirements of the program are as follows:

1. At least 10 courses (30 units) in economics and business administration or in closely allied fields.
2. Approximately five courses (15 units) in forestry which deal with principles of administration and decision-making.
3. Experience as a paid managerial trainee with a cooperating firm for a period embracing the included summer and fall semester of the second year.
4. A written analysis of some phase of the managerial operation of the organization with which the training period is spent.

A specific program of study, commensurate with each student's academic background and future goals, will be developed by the program Advisory Committee in consultation with the student. A sample list of suggested courses included in such a program of study is available on request.

Students entering this program must meet the admission requirements of the School of Forestry and be approved by a committee representing the faculties of Economics and Forestry. The financial award benefits of the School of Forestry are available to applicants for this program (see

pages 33-35). Application forms for admission and financial aid may be obtained from the Director of Admissions of the School of Forestry upon request.

Forest Protection Program

A combined program of specialization in entomology-pathology is available for students desiring career preparation in the applied aspects of forest insect and disease control. This program of study leads to the Master of Forestry degree. Students electing the program must hold either a Bachelor's Degree in general forestry or equivalent preparation in the biological sciences.

The general requirements of the program are as follows:

1. A minimum of 28 units in forest entomology and forest pathology. With approval, credits in closely related disciplines may be substituted.
2. At least 12 units of courses and seminars dealing with managerial and statistical aspects of forest protection.
3. One summer of employment experience with a forest protection agency.
4. Organization, conduct, and report of applied research on a forest insect and/or disease problem (4 units).

Reasonable latitude will be permitted in selecting courses to accommodate specific needs and interests. Each program of study will be developed in consultation with the program directors. A list of recommended courses is available on request.

Admission to this program must meet the requirements of the School of Forestry and the approval of the program advisory committee. Application forms for admission and financial aid may be obtained from the Director of Admissions of the School of Forestry.

Master of Science Degree

Prerequisites

The degree Master of Science (M.S.) is offered through the Department of Forestry in the Graduate School. As a prerequisite to this degree a student must have earned a baccalaureate degree from an accredited college or university. There is no foreign language requirement for this degree.

Major and Minor Subjects

The work for the Master of Science degree is designed to provide a basic foundation in a fundamental area of forestry or in a field closely

allied with forestry. A minimum of 30 units of credit is required for the degree; 24 units must be in formal courses while not more than 6 units can be earned for the thesis. Specific course requirements call for a minimum of 12 units in a major field of specialization and 6 units in a minor area of concentration. The major and minor fields are determined without regard to departmental divisions of the University if the interdisciplinary nature of the area of specialization makes such a program of study advisable. The specific program of study is developed by the major professor (thesis supervisor) subject to the approval of the Director of Graduate Studies in Forestry and the Dean of the Graduate School.

The Thesis

Filing the Thesis Title. At least one month before presenting the thesis, that is on or *before March 1 for a June degree* or on or *before August 1 for a September degree*, the student must file with the Dean of the Graduate School, on the official form, the title of the thesis and declaration of intention to graduate. The title must have the approval of the Director of Graduate Studies in the major department, and of the thesis supervisor. If the student has met the degree requirements before the above deadlines, he must file his intention to graduate one month before the thesis is presented.

Preparing the Thesis. All basic requirements for preparing the thesis are described in the *Manual of Style for Theses and Dissertations,* revised 1961, obtained at the Duke University Book Store, West Campus. The quality of paper, form, and binding are prescribed in the *Manual.*

Submitting the Thesis. Four typewritten copies of the thesis bound in snap binders supplied by the Library must be submitted through the Graduate Office to the Dean of the Graduate School on or before May 1 for a June degree or August 15 for a September degree and at least one week before the scheduled date of the student's examination. The copies will then be distributed by the student to the several members of the examining committee. Three copies for the Library will be bound by the Ruzicka Bindery, fee $5.00 a volume. The student will state whether or not he wishes more than three so bound.

The Examining Committee and the Examination

The instructor who directs the student's program appoints an examining committee composed of himself and two other members of the graduate faculty, one of whom must be from a department other than that of the major. If the student has been permitted to take related work within the major department, the third member may represent the minor field within the department. This committee is submitted for approval to the Dean of the Graduate School at least one week preceding the final examination.

The student's committee administers the examination and certifies whether the student has passed or failed by signing the card provided for this purpose by the Graduate Office. This card is used to indicate completion of all requirements for the degree. If a thesis is presented, the committee also signs all copies of the thesis, and the candidate then returns the original, the first two carbon copies, and any other copies he wishes bound by Ruzicka, to the Dean of the Graduate School, who deposits them in the University Library.

Master of Arts Degree

The degree Master of Arts (A.M.) is offered through the Department of Forestry in the Graduate School. As a prerequisite to the degree a student must have earned a baccalaureate degree from an accredited college or university. Students interested in working toward this degree should refer to the Graduate School Bulletin for specific requirements.

Doctor of Forestry Degree

The degree Doctor of Forestry (D.F.) is a professional and research degree conferred on those students who have satisfactorily completed specified requirements of advanced study and research.

Work toward the D.F. degree, consisting of advanced studies in a major and a minor field, is offered with majors in the several branches of forestry. A minor may also be elected in forestry or in other areas of specialized study in the University approved by the faculty of the School of Forestry. Prospective students should correspond with the Director of Admissions of the School of Forestry on all matters pertaining to admission to the School.

Doctor of Philosophy Degree

The Doctor of Philosophy degree (Ph.D.) is conferred through the Graduate School of Duke University. Programs of study and research for men and women working toward the attainment of this degree are directed by faculty members of the School of Forestry who also comprise the graduate faculty of the Department of Forestry in the Graduate School. Both major and minor programs of study are available in the following branches of forestry: forest biochemistry, forest biometry, forest meteorology, forest ecology, forest economics, forest entomology, forest hydrology, forest pathology, forest soils, forest-tree physiology, and

wood science including wood anatomy, timber physics, and wood chem istry.

The Ph.D. degree is essentially a research degree. Although cours work is a necessary part of the student's program, the mere accumulatio of course credits will not be sufficient for attaining this degree. The grant ing of the Ph.D. is based primarily upon the student's knowledge of specialized field of study and upon the production of an acceptable dis sertation embodying the results of original research.

General Requirements

The formal requirements, discussed in detail below, for the doctora degrees are as follows: (1) foreign languages; (2) major and mino courses; (3) supervisory committee for program of study; (4) residence (5) preliminary examination; (6) dissertation; (7) final examination. I order to be considered for candidacy for a doctoral degree, the studen must have passed all of his course work in the first year of graduate study on at least 9 units of course work in the first year he must have made grade of *G* or better.

Foreign Language Requirements

Because a requirement for a doctoral degree is the mastery of two ac ceptable foreign languages, the prospective graduate student should at tain mastery of at least one of them, and preferably two before applyin for admission.

To prevent delay in meeting this requirement, students whose pro grams call for mastery of French, German, Russian, or Spanish are urge to take the appropriate ETS Graduate School Foreign Language tes prior to registration. It should be noted, however, that at the time of th final examination in a master's program or of the preliminary examinatio in a doctoral program, language certificates more than six calendar year old will not be accepted toward fulfilling the language requirement.

Acceptable Languages

The languages normally accepted are French, German, or Russian bu a student may substitute for any one of these another language which ha a definite relation to the candidate's program of work for the degree an for which an examination can be provided.

Meeting the Requirements

At least one of the language requirements must be met during o before the student's first regularly enrolled semester at Duke. Student

not able to comply with this regulation will be required to reduce their maximum allowable load in succeeding semesters by 3 units until the first language requirement has been met. The second requirement must be met before the student is permitted to take his comprehensive preliminary examination. Enrollment in non-credit language courses will be considered a part of the student's maximum allowable load in any one semester.

Language requirements may be met before or after first registration here in the following ways:

Before First Registration

1. *By Transcript.* With the permission of the Dean and of the chairman of his program committee, the doctoral student may file a transcript or other certification as evidence of having passed a comparable examination at another graduate institution. The limitations are that (1) only one of the two doctoral requirements may be met in this way, (2) the other institution offers a doctoral program in the student's major and that the examination would have met a doctoral requirement there, and (3) the examination was passed no more than five years before first registration here.

2. *By ETS Scores.* The Educational Testing Service Graduate School Foreign Language tests in French, German, Russian, and Spanish are offered at many centers including Duke University Counseling Center upon nationally uniform dates. Scores on these tests taken elsewhere not more than five years before registration here may be offered to meet the language requirement.

After First Registration

1. Students wishing to be examined in French, German, or Russian take the ETS test.

2. Students who wish to be examined in Spanish take the ETS test if they first registered in September 1967 or thereafter. If they registered before that date, they take either the ETS test or the locally prepared reading test. Upon request, a locally-prepared reading test will be administered in Italian.

3. Reading examinations in other languages must be individually arranged. Each ETS examination requires a fee of $8. The student who requires a re-examination in the locally prepared reading examination at scheduled times will be charged $5 for each re-examination; if special times are necessary, the fee will be $10. Examinations at special times cannot be offered in French and Spanish.

Special Reading Courses

Special courses designed to assist graduate students in acquiring a read ing knowledge of French or German are offered for three hours a week French during the fall semester, German during the spring semester and the Summer Session. A student who registers for either course mus reduce his normal load of graduate courses by three units, with no reduc tion in fees. *No auditors* are permitted in these courses at any time

Requirements for Foreign Students

Foreign students whose native language is not English are, during thei first registration period, required to take a test for minimum competenc in English. Such students, with the approval of the Director of Graduat Studies in their major department, may request substitution of English fo *one* of the required foreign languages in the doctoral program. If permis sion is granted, an additional reading test in English will be arranged.

Foreign Languages

A reading knowledge of two acceptable foreign languages is required This requirement must be met before preliminary examinations are taken

A student working toward the doctoral degree should complete the lan guage requirements for that degree by the end of his first year o residence. If he fails to meet these requirements by the end of his thir semester of residence, he must register in the appropriate special readin course or courses (see above) until he has satisfied the requirements

Major or Minor

The student's program of study necessarily demands substantial con centration on courses in his major department. It must, however, includ a minimum of six units in a minor subject or related fields approved b his major department. Use of related fields within the major departmen requires the approval of the Dean.

Committee to Supervise the Program of Study

As early in a student's course of study as is practicable and *not late than two months before the preliminary examination* the Director o Graduate Studies in the major department will nominate for the approva of the Dean a supervising committee of five, one being designated a chairman. This committee will include at least three members of th major department and one from the minor department if a minor i involved. This committee will approve the program of study, as well a

administer the preliminary examination and the final doctoral examination. Should all members of the committee be from the major department, at least one member of another department will be added or substituted for the final doctoral examination. The final examination may be administered with a minimum of four members.

When the preliminary examination is arranged, the committee and the Director will submit to the Dean the student's program of study bearing a statement that the Department's course and language requirements have been or are being completed.

Residence

The *minimum* registration requirement is 60 units of graduate credit, not more than 30 units of which may be accepted by transfer. Since a full program is 30 units per academic year, the prospective Doctoral candidate who enters with the A.B. or B.S. degree must plan to spend in residence a *minimum* of two academic years; if he enters with the A.M., M.S., or M.F., his *minimum* residence is one academic year. If there are undergraduate deficiences in his program, he may in addition to the minimum requirements be required to take preliminary undergraduate courses for which he will not receive graduate credit. Even if there are no such undergraduate deficiencies, the student's supervisory committee will determine what requirements if any above the minimum the student must meet.

See pages 37-39 for further information on registration in residence and *in absentia*.

Time Limitations. 1) At the time that the preliminary examination is passed any courses, language certifications, or other credits for advanced standing which are more than six calendar years old will not be accepted toward fulfilling the minimum requirements of the doctoral degree.

2) The student should normally pass the preliminary examination by the end of his second year of graduate study. If he has not passed it by the middle of the third year, he must file with the Dean a statement explaining the delay and setting a date for the examination. Except under unusual circumstances, extension will not be granted beyond the end of the third year.

3) The doctoral dissertation should be submitted and accepted within two calendar years after the preliminary examination is passed. Should the dissertation not be submitted and accepted within four years after the examination, the candidate, with the approval of his committee, may petition the Dean for an extension of one year. Should this extension be granted and the dissertation not be submitted and accepted within the

year, the student to remain a candidate for the degree must pass a second preliminary examination. In such a case, the time limit for submitting the dissertation will be determined by the Dean and the candidate's committee.

Preliminary Examination

A student is not accepted as a candidate for the doctoral degree until he has passed the preliminary examination. A transfer student who may have passed a preliminary examination elsewhere must nevertheless take the examination at Duke. The examination ordinarily covers both the major and minor fields.

In the summer, a preliminary examination may be scheduled only between the opening and closing dates of the summer session.

Privilege of Re-Examination. Should the student fail the preliminary examination, he may apply, with the consent of his supervisory committee and of the Dean, for the privilege of a second examination to be taken no sooner than three months after the date of the first. Failure on the second examination will render the student ineligible to continue his program for the doctoral degree at Duke University.

The Dissertation

The dissertation is expected to be a mature and competent piece of writing, embodying the results of significant and original research.

Filing Title. Not later than March 1 (March 2 if March 1 falls on Sunday) preceding the June commencement at which the degree is expected to be conferred, the student must file with the Dean of the appropriate school, on the official form to be obtained from the Graduate Office, the title of the dissertation. This title must receive the written approval of both the Director of Graduate Studies of the student's major department and the professor who directs the dissertation.

Form. The basic requirements for preparing the dissertation such as quality of paper, form, and binding are prescribed in the instructions for microfilming (see below) and in the *Manual of Style for Theses and Dissertations,* revised 1961, to be obtained from the Duke University Book Store, West Campus.

Submitting Dissertation. The dissertation must be completed to the satisfaction of the instructor who directs it. Four typewritten copies bound in snap binders secured through the Graduate Office must be deposited with the dean of the appropriate school on or before April 15 preceding the June commencement when the degree is to be conferred. The dis-

sertation must be submitted at least seven days before the scheduled date of the student's examination.

Publication on Microfilm. All doctoral dissertations will normally be published on microfilm through University Microfilms, Ann Arbor, Michigan. Authors may, if they wish, also copyright them. The abstract will be published in *Dissertation Abstracts.* Before final typing is completed, the candidate should obtain in the Graduate Office detailed instructions on the procedure together with a microfilming agreement which is signed and returned when the dissertation is finally deposited in the Graduate Office.

In brief, all copies of the dissertation, the original in clean type, will remain unbound except for spring binders. Ten copies of an abstract, carefully written and not more than 600 words long, are submitted when the dissertation is first presented. A non-returnable dissertation fee of $25 is charged for handling and microfilming. If copyright is desired, an additional fee of $7 plus 2½ cents per page is charged. The original and first 2 carbon copies will be bound by the Ruzicka Bindery. The fee is $5.00 a volume. The student may request that more than the three copies be so bound.

Final Examination

The final oral examination shall be primarily on the dissertation. Questions may, however, be asked in the candidate's major field. Except in unusual circumstances approved by the Dean, a final examination will not be scheduled when school is not in session.

If a student fails his final examination, he may be allowed to take it for a second time, but not sooner than six months from the date of his first. Permission to take the second examination must be obtained from the instructor who directed the dissertation and from the Dean. Failure to pass the second examination renders the student ineligible to continue work for the doctoral degree at Duke University.

Cooperative Plan of Study with Selected Colleges and Universities

Since its inception the Duke School of Forestry has had the cooperation of Trinity College (the men's undergraduate college of arts and sciences of Duke University) in preparing students for professional careers in forestry. Under the plan, a student devotes his first three years to a coordinated and carefully integrated program of study in the basic arts and sciences in Trinity College. The five following semesters are spent in the School of Forestry. Upon the successful completion of this five and one-half year course of study, a student will have earned the Bachelor of Science degree from Trinity College and the professional Master of Forestry degree from the Duke School of Forestry.

Based upon the experience and success of this cooperative program with Trinity College, the School of Forestry in 1952 initiated similar programs of collaboration with a selected group of colleges and universities located throughout the United States. These programs offer students the numerous advantages of a broad background in liberal arts and sciences as preparation for later professional training. A student intent upon following such a course of study should make application to one of the colleges listed on pages 17-20. Admission requirements and other information pertinent to matriculation may be obtained from each of these institutions. Not later than the end of the first semester of the third year in the college

or university of his choice, the student may make formal application for admission to the Duke School of Forestry. To qualify for admission under these programs, a student must have followed a course of study arranged in consultation with his advisor, must have the official recommendation of his college, and must meet the minimum requirements for admission to the Duke School of Forestry.

Institutions Cooperating with the School of Forestry in the Academic-Forestry Program

Alabama

Samford University Birmingham 35209

Arkansas

Little Rock University Little Rock 72204

Colorado

Colorado College Colorado Springs 80903

Florida

Florida Southern College Lakeland 33802
Rollins College Winter Park 32791
Stetson University, College of Liberal Arts DeLand 32720

Georgia

Mercer University Macon 31207

Illinois

Illinois Wesleyan University, College of Liberal Arts Bloomington 61710

Indiana

Butler University, College of Liberal Arts and Sciences Indianapolis 46207
Indiana Central College Indianapolis 46227

Iowa

Iowa Wesleyan College Mount Pleasant 52641

Kansas

Baker University Baldwin 66006

Louisiana

Centenary College of Louisiana Shreveport 71104

Maryland

Western Maryland College Westminster 21158

Michigan

Albion College Albion 49224

Mississippi

Millsaps College Jackson 39210

Missouri

William Jewell College Liberty 64068

Nebraska

Doane College Crete 68333

New Jersey

Drew University, College of Liberal Arts Madison 07940

New York

Hofstra University Hempstead, Long Island 11550

North Carolina

Catawba College Salisbury 28144
Duke University, Trinity College Durham 27706
Guilford College Guilford College 27410
High Point College High Point 27262
Wake Forest College Winston-Salem 27106

Ohio

Baldwin-Wallace College Berea 44017
Denison University, A College of Liberal Arts and Sciences Granville 43023

Heidelberg College Tiffin 44883
Kent State University, College of Liberal Arts Kent 44240
Marietta College Marietta 45750
Miami University, College of Arts and Sciences Oxford 45056
Ohio University Athens 45701
Otterbein College Westerville 43081
Wittenberg University Springfield 45501
Youngstown University Youngstown 44503

Oregon

Reed College Portland 97202
Willamette University, College of Liberal Arts Salem 97301

Pennsylvania

Albright College Reading 19604
Elizabethtown College Elizabethtown 17022
Franklin and Marshall College Lancaster 17603
Gettysburg College Gettysburg 17325
Juniata College Huntingdon 16653
Lebanon Valley College Annville 17003
Lycoming College Williamsport 17704
Moravian College Bethlehem 18018
Muhlenberg College Allentown 18104
Thiel College Greenville 16125

South Carolina

Furman University Greenville 29613
Newberry College Newberry 29108
Wofford College Spartanburg 29301

Tennessee

Carson-Newman College Jefferson City 37760
Chattanooga, University of, College of Liberal Arts Chattanooga 37403
East Tennessee State University Johnson City 37602
Lincoln Memorial University Harrogate 37752
Tennessee Wesleyan College Athens 37303
Tusculum College Greenville 37743

Texas

Baylor University, College of Arts and Sciences Waco 76706

Virginia

Bridgewater College Bridgewater 22812
Randolph-Macon College Ashland 23005
Richmond, University of, Richmond College Richmond 23173
William and Mary, College of Williamsburg 23185

West Virginia

Davis and Elkins College Elkins 26241
Marshall University Huntington 25701
West Virginia Wesleyan College Buckhannon 26201

Wisconsin

Beloit College Beloit 53512

Resources for Study

General and Research Facilities

The School of Forestry is housed in the south wing of the Biological Sciences Building on the West Campus. General and research laboratories are provided for routine and original studies in all of the subject matter fields. These laboratories are equipped with instruments and facilities for quantitative evaluation of biological materials and processes. Greenhouses and the phytotron immediately adjacent to the Biological Sciences Building and the nearby Duke Forest offer excellent facilities for biological investigations in controlled and natural environments. An IBM system 360 Model 75 Digital Computer is available for processing research data.

Facilities of allied departments of the University are also available for advanced work in chemistry, economics, genetics, mathematics, plant anatomy, plant ecology, plant pathology, and plant physiology.

West Virginia Pulp and Paper Company has made available to Duke University a field headquarters for work in the forests of the South Atlantic Coastal Plain. This camp, located 18 miles northwest of Summerville, South Carolina, is used as a base for field instruction in timber harvesting, wood utilization, soils, silviculture, and forest management.

The School periodically sponsors conferences and symposia on industrial forest management and other technical and scientific subjects. These offer the current viewpoints of many outstanding individuals in both forestry and in allied fields.

The University library, with 1,944,554 volumes and 4,000,000 manu-



Excellent greenhouse facilities are available for study of the biology o forest trees.

scripts, provides exceptional resources and facilities for study and researcl by undergraduate and graduate students, and by visiting scholars. Abou 80,000 volumes are added annually, while 164 foreign and domesti newspapers and 9,761 periodicals are received currently. Large col lections of microfilms of rare books, newspapers, and periodicals are als available.

The Biology-Forestry library (100,000 volumes), Chemistry librar (25,000), and Physics-Mathematics library (35,000) are housed for con venience in the buildings of these departments. The libraries of th Schools of Divinity (136,000), Law (158,000), Medicine (90,000), and o the School of Engineering (41,000) are also shelved in the buildings o these schools, all on the West Campus. The Womens College Library or East Campus includes another 171,000 volumes.

The Duke Forest

The Duke Forest, of approximately 8,000 acres, is particularly wel situated for field work. A five-minute walk from the campus will take one well into many parts of the area, while even the most distant portion can be reached by automobile in about twenty minutes.

Short-term research projects are conducted in the Forest by gradu ate students in forestry, botany, zoology, and other disciplines. More extensive problems are investigated by the faculty with student assistance segments of which may be used by students for observation, analysis, and interpretation. Many of these studies serve admirably as instructiona

material. The Forest provides additional instructional material, as well as demonstrations on an operational scale, of advanced forest practices developed at Duke and elsewhere.

The Forest lies mainly in Durham and Orange Counties near the eastern edge of the Piedmont Plateau. A cross-section of much of the woodlands in the upper coastal plain and lower Piedmont of the Southeast is represented in the Forest with its variety of topography, soil, forest conditions, and patterns of past land use. Elevations range from 280 to 760 feet. The soils are derived from such diverse parent material as metamorphic rock of the Carolina slate formation, granite, Triassic sedimentary rock, and basic intrusives. Nearly one hundred tree species are represented. Some eighteen miles of improved woods roads make all parts of these woodlands readily accessible. It serves as an outdoor laboratory for instruction in forestry and allied fields, and as an experimental forest for research in problems of timber growing and in the sciences basic thereto. It is also used to demonstrate methods of silviculture and forest management applicable to the region.

At few other places in America are there provisions for extensive field study and research in forestry literally at the door of a large university. This natural outdoor laboratory, so conveniently located and representative of the region, is a most valuable supplement to the instructional, laboratory, and library facilities of Duke University.

Forestry Sciences Laboratory

The establishment of the Forestry Sciences Laboratory research facility of the United States Forest Service's Southeastern Forest Experiment

The Duke Forest is well utilized by students to test theories concerning the tree and its environment. Here a student monitors the uptake of radioisotopes in a plantation.





Guests examine some of the plants grown in Duke University's Phytotron.

Station in the Research Triangle Park near Durham provides an unusual opportunity for complementing the research programs of students in the School of Forestry. Specialized research projects in forest entomology, pathology, and soils are currently under way at the Laboratory. The research staff of the Laboratory is available for consultation, participation in seminars, and service on graduate committees of students in the School of Forestry. Arrangements may also be made for students to conduct certain aspects of their research at the Laboratory.

Phytotron

A controlled environment plant growth facility adjoins the Biological Science Building.

The Duke phytotron contains 50 separately controlled environmental areas. In the chambers and greenhouses it is possible to dissect or reproduce any total environment in the world. Using this procedure, one can study the influence of each environmental factor on the growth processes of trees. The chambers accommodate trees up to six feet tall, the greenhouses even larger plants.

The Duke phytotron is one of three such laboratories in the United States.

Student Life

Living Accommodations*

Duke University strives to provide comfortable, attractive living accommodations for graduate-level resident students, both married and unmarried.

The Graduate Center houses 197 male graduate students, 56 women graduate students, and 117 women undergraduates. Common facilities on the main floor are shared by men and women.

Room reservations are made through the Office of Housing Management only after official acceptance for admission to the University.

Rooms in residence halls are normally rented for the academic year, but for no period less than one semester or specific term.

Duke University has 98 one-bedroom luxury apartments under lease for a period of three years. An additional 104 two and three bedroom apartments will be under lease for one year to meet student requirements until a new married student housing complex is ready for occupancy about mid-summer 1970. All units are within walking distance of the campus. Detailed information and rental rates will be provided on request to applicants by the Director of Housing Management, Duke University, Duke Station, Durham, N.C., 27706.

A deposit of $25 is required with applications for residence halls or apartment units. The conditions for refund of the deposits will be provided at the time housing information is sent to each applicant.

* Information pertaining to graduate housing facilities is subject to change prior to September, 1969.

All requests for information for apartment-type accommodations should be addressed to the Director of Housing Management, Duke University. Specific information will be supplied as available.

For the cost of housing at Duke, see the section on Financial Information.

Dining Service

The dining facilities on the West Campus include two cafeterias with multiple-choice menus, a snack bar, and the Oak Room where full meals and a la carte items are served. The cost for the academic year will approximate $700.00, depending on the tastes of the individual.

In the Graduate Center there is a cafeteria with multiple-choice menus and a Coffee Lounge where sodas and sandwiches are served from 11:30 A.M. to 11:00 P.M. The prices in these dining rooms are the same as those on the West Campus.

Due to the large number of those served in the dining halls, it is not possible to arrange special diets for individual students. Special diets for the sick are served in the infirmary.

Services Available

Medical Care

The complete medical facilities of the Duke University Medical Center are available to all members of the University community. To secure the benefits of the Student Health program, a graduate student during the term or semester in which the illness occurs must (1) in the Summer Session term be registered for at least 1 unit research or 3 units of course work, (2) prior to completing minimum residence requirements be registered for at least 9 units per semester. Students are not covered during vacations and their dependents and members of their family are not covered at any time. Care is provided for men at the Student Health Office in Duke Hospital and for women at the Woman's College Infirmary.

The service provided includes hospitalization in Duke Hospital, when recommended by the Hospital staff, to a limit of thirty days; medical and surgical care under the supervision of a senior physician or surgeon; drugs, X-ray work, and ward nursing. Students pay for board while in the hospital. Excluded from the service are refraction of eyes, treatment of teeth, and of all chronic and pre-existing conditions, and elective surgery.

Students are urged to carry adequate health insurance to supplement Student Health Program services. If students have insurance providing

ospitalization, surgical, or medical benefits, the benefit shall be applied o the cost of their medical care. *Foreign students are required to hold his or another acceptable policy.*

tudent Activities

Forestry students new to Duke University are reminded that they re welcome to use such recreational facilities as swimming pools, tennis ourts, golf course, and to affiliate with choral, instrumental, drama, and eligious groups.

Students are encouraged to maintain broad professional contacts by articipation in the activities of the Society of American Foresters, the orest Products Research Society, the national honorary scientific society f Sigma Xi, and other societies appropriate to their major field of study.

The social and business events of the Forestry Club provide opportunities for many pleasant extracurricular activities. An active organiation of the wives of forestry students, the Forestry Dames, offers a egular schedule for social occasions of interest to this group.

he Duke University Counseling Center

Through the counseling center, the University provides a professional ounseling service designed to aid students in gaining a better underanding of themselves and the opportunities available to them. Counselng is available in the areas of career planning, educational opportunities, nd personal and social adjustment.

The Center maintains files of educational and vocational information elated to career planning, graduate educational programs and fellowhips, and study aids.

National and University-wide testing programs are administered by the enter. A continuing program of research in the areas of counseling and esting is also carried on by the staff of the Center.

ppointments Office

Duke University maintains an Appointments (placement) Office which cts as a liaison between the University and potential employers in busiess, education, and government. All services are offered without charge o Duke students and alumni. The staff is available to talk with students bout their future professional plans. Forestry students who wish to gister with the office are offered an opportunity to assemble a comlete dossier of academic records and recommendations to supplement pplications for positions and to have a permanent file for future refernce. Pertinent recommendations are far easier to accumulate during the me a student is enrolled at Duke. Interviews with representatives visitng Duke are scheduled throughout the year through the Appointments

(placement) Office for those students who have registered. Copies of academic records are released only with the permission of the individual

Conduct of Students

Duke University expects and will require of all its students continuing loyal cooperation in developing and maintaining high standards of scholarship and conduct.

The University wishes to emphasize its policy that all students are subject to the rules and regulations of the University as are currently in effect or, from time to time, are put into effect by the appropriate authorities of the University.

Any student, in accepting admission, indicates his willingness to subscribe to and be governed by these rules and regulations and acknowledges the right of the University to take such disciplinary action, including suspension and/or expulsion, as may be deemed appropriate, for failure to abide by such rules and regulations, or for conduct adjudged unsatisfactory or detrimental to the University.

Visiting Scholars

The libraries and, to the extent practicable, other facilities of Duke University will be made available to faculty members of colleges and universities who wish to spend a period of time on the campus in pursuit of their scholarly interests. No fees will be charged such visitors unless they wish to participate in activities for which a special fee is assessed. Room and board may be arranged for at the regular rates in the dormitories and dining rooms. Dormitory space is usually available during the summer months. Inquiries concerning residence for visiting scholars should be directed to the Dean of the Graduate School.

Admission

Master of Forestry

The admission requirements of the School of Forestry for work toward he Master of Forestry degree presuppose that an applicant is either:

1. A graduate of a professional school of forestry, or
2. A graduate of a college or university of high standing, but without prior professional training in forestry, or
3. A student who has successfully completed three years of approved study at one of the colleges (listed on pages 17-20) cooperating with the School in the academic-forestry training program.

Each applicant must present a certified transcript of his academic ecord showing the courses he or she has taken, the number of credit hours e or she has earned, and the grades received. Although specific courses re not required for admission, applicants must be aware that many fields ithin forestry require academic preparation of a specialized nature.)eficiencies, if any, may be satisfied in residence, possibly prolonging the me necessary to complete degree requirements. Students interested in pecialized areas of forestry should write the Dean for advice as to specific reparatory courses.

An applicant who is a graduate of a professional school of forestry will resent a certified transcript of his or her scholastic record showing the

attainment of a degree. Before registering for the first semester of residence, the students will be required to select the branch or branches of forestry in which they wish to concentrate the major part of their work and to prepare their proposed programs in conference with an appropriate faculty advisory committee. Ordinarily, graduates of a fully accredited school of forestry should be able to meet all requirements for the Master of Forestry degree in one full school year of resident study; others may require a longer period of residence.

Doctor of Forestry

Admission to the School of Forestry for a program of study and research leading to the degree, Doctor of Forestry, is granted to a student who has received the degree, Master of Forestry, or its equivalent.

An applicant must file a formal application for admission together with transcripts of his undergraduate and graduate academic records. In his application he should clearly state the branch of forestry in which he desires to concentrate, and if possible, the specific research.

The Director of Admissions of the School of Forestry, together with the prospective student's major advisor, will determine if the qualifications of the applicant meet entrance requirements.

Master of Science and Doctor of Philosophy

Applications for admission into M.S. and Ph.D. programs in Forestry should be submitted to the Director of Admissions, Duke School of Forestry, for transmittal to the office of the Dean of the Graduate School.

A student seeking admission to the Graduate School of Duke University must have received an A.B. or B.S. degree (or the equivalent in the case of foreign students) from an accredited institution. His undergraduate program should be well rounded and of such quality as to give positive evidence of capacity for graduate study.

Financial Information

The following table shows the charges collected from all students. All charges for each semester are due and payable, unless otherwise specified, at the time of registration and no student is admitted to classes until arrangements have been made with the Bursar of the University for the settlement of such charges. After the day of registration no refund of tuition will be made except for involuntary withdrawal to enter the armed services.

Tuition and Fees

Tuition, per semester	$855.00
Spring field seminars	$ 10.00
Absentia Fee, per semester (when applicable)	$ 57.00

Forestry students may obtain admission to all regularly scheduled University athletic contests held on the University grounds during the entire academic year by payment of an athletic fee of $25.00 per year plus any Federal taxes that may be imposed. This fee is payable in the fall semester.

Audit Fee

If a student registers and pays fees for 12 units or more he may audit one course without charge. Should he be permitted to audit a second

course or should he be registered for less than 12 units the audit fee i $30.00 per course.

Transcripts

A student may request transcripts of his academic record. A minimun fee of one dollar, payable in advance, is charged for a single copy. A charge of $.50 will be made for each additional copy on the same orde

Living Accommodations

Rooms in the Graduate Center are equipped for two persons. Th rental charge for a double room is $650.00 for the academic year, o $325.00 for each occupant, or $162.50 per occupant for each semeste Rooms are rented for the academic year, but for no period of less tha one semester.

All requests for rates and other information for apartment-type ac commodations should be addressed to the Director of Housing Manage ment, Duke University. Specific information will be supplied as avai able.

Housing for women students in the graduate women's facilities i available at comparable rates.

No refund of room rent will be made except for involuntary with drawal to enter the armed services. Such refunds will be made i accordance with the University's established schedules.

Motor Vehicles

Each student possessing or maintaining a motor vehicle at Duke Un versity shall register it annually at the beginning of the fall semester. I a student acquires a motor vehicle and maintains it at Duke Universit after enrollment, he must immediately register it. At the time of registra tion of a motor vehicle the following documents must be presented:

(a) State vehicle registration certificate.

(b) Valid driver's license.

(c) Satisfactory evidence of automobile liability insurance coverag with limits of at least $10,000 per person and $20,000 per accident for pe sonal injuries, and $5,000 for property damage, as required by the Nort Carolina Motor Vehicle Law.

(d) If the student is under 21, a statement signed by the student parent or guardian granting the student permission to operate a moto vehicle at Duke University.

There is a registration fee of thirty dollars per year for each aut

mobile operated on the campus by students who live on the campus. There is a similar fee of ten dollars for the registration of two-wheeled motor vehicles.

Estimated Expenses for an Academic Year

The following table represents an estimate of a graduate student's basic expenses in the School of Forestry for one year. It should be noted, however, that this estimate does not include any allowance for travel, clothing, and other miscellaneous expenses inasmuch as these costs will vary depending on the needs, habits, and tastes of the individual.

	Low	*Moderate*	*Liberal*
Tuition	$1,710.00	$1,710.00	$1,710.00
Room-rent*	325.00	325.00	420.00
Board	550.00	600.00	650.00
Laundry	30.00	40.00	50.00
Books	50.00	65.00	100.00
Athletic Fee (optional)	25.00	25.00	25.00
Spring field seminars	10.00	10.00	10.00
	$2,700.00	$2,775.00	$2,965.00

*In the Graduate Center.

Student Aid

Fellowships, Scholarships, and Assistantships

A number of fellowships, scholarships, and assistantships are allocated to the School of Forestry for the encouragement and financial assistance of men and women who offer promise of becoming leaders in the forestry profession. These are awarded to applicants of high character on the basis of scholastic ability as judged by previous educational performance, professional experience, personal references and the Graduate Record Examination.

Holders of the awards will pay tuition and such additional fees as are regularly required.

The awards are of three classes:

Fellowships

From five to eight fellowships, with stipends ranging from $2,300-$4,000 per academic year. Each recipient must have previously completed work equivalent to that required at Duke University for a Master's degree with a major in forestry or in a discipline basic to forestry. He will devote his

time to an approved program of study and research in any of th branches of forestry. He is expected to become a candidate for the degre of Doctor of Forestry or Doctor of Philosophy.

Scholarships

From fifteen to eighteen scholarships with stipends ranging from $1,70 $2,800 per academic year. Each recipient will normally devote his tim to an approved program of study leading to the degree of Master Forestry, or Master of Science with a major in forestry.

Graduate Assistantships

One to several graduate assistantships with variable stipends up t $4000, depending upon available funds and upon whether granted for th academic year only, or the academic year plus the summer. Eac recipient will devote half-time to research or other work of the School Forestry. He will be permitted to enroll for not more than 20 semest hours in an academic year in an approved program of study, or stud and research, leading to a degree of Master of Forestry, Master Science, Doctor of Forestry, or Doctor of Philosophy.

Application for Awards

Any student admitted to the School of Forestry is eligible to apply f a fellowship, a scholarship or an assistantship. Application for thes awards may be made concurrently with the application for admission.

The general procedures and requirements for applying for any financi award in the School of Forestry are outlined below. Applicants shoul initiate the necessary action early to insure that the required documen are filed with the Dean of the School of Forestry on or before March prior to enrollment.

1. File award application. Form will be supplied by the School Forestry on request.
2. Furnish supporting documents as follows:
   a. Official transcripts of record of all previous college or universi credits earned.
   b. Letters of reference from at least three persons familiar with t applicant's character, scholarship, and professional ability.

   (Documents offered in support of admission, if so designated, ma also serve in support of the application for financial award.)
3. Complete the Aptitude Test of the Graduate Record Examinatio Instructions and application for admission to this locally admi istered examination are available on most college campuses, from t Duke School of Forestry, or by writing the Educational Testing Se

vice, Princeton, New Jersey. Applicants should plan to take this examination in January or earlier.

Notification of awards is made on April 1. In case vacancies occur, completed applications received after March 1 will be considered at a later date.

In every instance where a graduate assistantship, scholarship, or fellowship for the next academic year is offered to an actual or prospective graduate student and accepted before April 15, the accepter may resign his appointment without prejudice prior to that date by notification in writing to the Dean. However, an acceptance given or left in force after April 15 obligates him not to accept another appointment without first obtaining formal release from the Dean of the School.

Loans

Students who are enrolled as full-time degree candidates and who have satisfactory academic and citizenship records are eligible to apply for student loans.

Loans from university funds generally mature after borrowers have left the University. Interest accrues on long-term loans from University funds at the rate of one percent per annum from the date of each note. After a student has left the University permanently, the loans begin accruing interest at the rate of three percent per annum for a period of five years. Interest accrues at the rate of six percent after the three percent ceases to be effective.

In addition to local loan funds, Duke University participates in the student loan program established under the provisions of the National Defense Education Act of 1958. Repayment of these loan funds normally begins one year after the student terminates full-time study. Interest accrues at the rate of three percent per annum commencing one year after termination of full-time study. Upon completion of the period of grace of 12 consecutive months, the ten-year annual repayment period begins, and simple interest on the loan at the rate of three percent starts to accrue. At this point the borrower still has one additional year before his first annual payment becomes due. The first annual installment will therefore fall due 24 months after the borrower has ceased being a full-time student in an institution of higher learning.

Special benefits to those teaching in non-profit schools, colleges, and universities permit a portion of the loan to be cancelled depending upon the length of teaching service.

Complete details regarding the student loan program may be obtained by writing to the Student Loan Division of Duke University. In ap-

proving loan applications, the Student Loan Committee selects those students who, from the standpoint of character, scholastic attainment personality and degree of financial need, are deserving of this consideration. All applications for loans should be made before July 1 preceding the academic year in which the student plans to matriculate.

All applications for loans should be made to the Student Loan Division Allen Building, Duke University, Durham, N. C. 27706.

University Registration and Regulations

Registration

All students who enter course work or residence for credit; all students who have completed minimum requirements for an advanced degree, but continue to use the facilities of the University in their research; all students in *in absentia* status; and all students who wish merely to audit a course or courses must register.

After the applicant has received notification of his admission to the School of Forestry and has returned his statement of acceptance of admission, he may present himself for registration. During the registration periods, announced in the *Bulletin*, he first confers with an assigned faculty advisor who prepares and signs a course card, listing the course work to be taken during the semester. The student then presents this course card to registration officials, who enroll him officially in his courses. After his first registration period as a current student he will preregister at the stated times for pre-registration. Failure to preregister incurs the penalty for late registration. *Former students* who intend to register to resume a degree program must give the Director of Admissions notice of this intention two months before registration. A period of five weeks from the date of registration is provided for changes resulting from passing a preliminary examination.

Late Registration

All students are expected to register or preregister at the times state in the *Bulletin.* Those registering late, including those who are oblige to register *in absentia,* are subject to a *late registration fee of* $10.00.

Change of Registration

During the academic year within a period of *fourteen days* from th registration date students may change registration with the approval o his advisor, if no reduction of fee is involved, and with the approval o the Dean if reduction of fee is involved. During the first thirty days fro the registration date the only permissible change is dropping course seminar registration and adding equivalent units of research, with th approval of his advisor, the instructor of the course, and the Dean.

Normal Registration

A graduate student is designated as fully registered when he register for the maximum credit his program requires. Required registration is s in consideration of the student's obligation to teach or assist and the stag he has reached in completion of degree requirements. In the *academi year* normal registration for the resident student who does not hold a appointment as part-time instructor or assistant or does not engage i part-time work is 15 units a semester or 30 units an academic year. Th normal registration for the student who holds such an appointment o undertakes such work is either 12 units or a minimum of 9 units depend ing upon the number of hours a week he is required to devote to suc duties.

The resident student in a terminal master's program which requires n thesis carries normal registration until he has met all degree requirement If a thesis is required and the student has met all requirements except fo submitting his thesis, he registers for 3 units a semester while in residenc or, if he elects to go out of residence, for 1 unit *in absentia* each semeste until the thesis is accepted.

The resident student engaged in a master's program which is nc terminal but preparatory to a doctoral program registers as though h were a doctoral student.

The resident student in a doctoral program carries normal registratio through the semester in which he passes the preliminary examination. I he remains in residence, he continues to register for a minimum of 3 unit a semester until the dissertation is accepted. If, before or after passin the preliminary examination, he elects to go out of residence, he register for 1 unit a semester *in absentia* in order to keep his program active.

It is necessary to be a fully registered student according to the regula tions listed above (except when registered *in absentia*) in order t establish eligibility for library carrel and laboratory space, for studer housing, for University and some outside loans, for Student Health servic

including voluntary insurance coverage, and for reporting status for military duty.

The registration of 1 unit a semester *in absentia* provides occasional consultation with the thesis or dissertation supervisor. It may be waived for military duty or serious problems of health.

In the *Summer Session* 6 units a term is maximum registration. Students resident in the academic year who wish to continue study and use of University facilities including Summer Session Student Health during the summer must register for 1 unit in the first Summer Session term. This registration provides use of these facilities for both terms.

Transfer of Graduate Credits

Credit for graduate course work earned at another institution will be determined only after a student has spent one semester at Duke University. After completing his first semester, the student through his Director of Graduate Studies should file a request that his credits be reviewed and a decision be made.

Reciprocal Agreements with the Consolidated University of North Carolina and with North Carolina College

Under a plan of co-operation between the University of North Carolina and Duke University, students regularly enrolled in the Graduate Schools of the University of North Carolina during the regular academic year, and paying full fees to that institution, may be admitted to a maximum of two courses per semester in the Graduate School of Duke University upon payment of a nominal registration fee of two dollars and of any other special fees regularly required of all students. Under the same arrangements, students in Forestry and the Graduate Schools of Duke University may be admitted to course work at the University of North Carolina. A similar arrangement exists with North Carolina College at Durham.

Grades

Grades in the School of Forestry are as follows: *E* (exceptional); *G* (good); *S* (satisfactory); *F* (failing); and *I* (incomplete).

An *I* (incomplete) indicates that some portion of the student's work is lacking, *for an acceptable reason*, at the time grades are reported. The instructor who gives an *I* for a course specifies the date at which the student must have made up the deficiency, in no case more than one calendar year from the date the course ended. If the course is not completed, the grade of *F* is entered upon the student's record unless his appeal to the Dean for the grade *No Credit* is approved.

A grade of *F* in any course normally occasions withdrawal from a degree program.

Courses of Instruction

General

152. *Conserving Natural Resources.* 3 units. *Staff*

200. *Careers in Natural Resources.* Required of students in Academic Forestry program. No credit. *Staff*

Biological Science

Dendrology and Wood Anatomy

249. *Identification of American Trees and Their Timbers.* 4 units *Harrar and White*

290. *Wood Anatomy.* Prerequisites: one year of biology, Forestry 249 or equivalent. 3 units. *Harrar*

292. *Microtechnique of Woody Tissue.* Prerequisites: Forestry 249 and 290 or equivalents. 3 units. *Harrar*

398. *Timbers of the World.* Prerequisite: Forestry 290 or equivalent 2 units. *Harrar*

* Related courses in other departments include—BOTANY: Anatomy, Systematics Physiology; CHEMISTRY: Organic Chemistry; CIVIL ENGINEERING: Mechanical Behavior of Materials.

Ecology

243. *Forest Ecology.* 3 units. *Woods*

247. *Biological Nucleonics.* Prerequisites: Consent of the instructor and one year each of college biology, chemistry, and physics. (Listed also as Zoology 247.) 3 units. *Woods and Fluke* (Zoology)

248. *Forest Regeneration.* 3 units. *Woods*

347, 348. *Forest Ecology Seminar.* Prerequisite: Forestry 243 or equivalent. 2 units. *Woods*

* Related courses in other departments include—BOTANY: Ecology, Plant Water Relations, Community Analysis and Classification, Principles of Plant Distribution, The Environment, Vegetation of North America, Evolution: ZOOLOGY: Animal Behavior, Vertebrate Zoology.

Physiology and Biochemistry

201. *Tree Physiology.* Prerequisite: permission of instructor. (Listed also as Botany 251.) 3 units. *Hellmers*

207. *Chemistry of Woody Tissues.* Prerequisite: Organic chemistry or consent of instructor. 3 units. *Barnes*

208. *Physiology of Wood Formation.* Prerequisite: Forestry 201 and 249 or equivalents. 3 units. *Barnes*

305. *Forest Tree Biochemistry.* Prerequisites: Forestry 201 and a course in biochemistry. 3 units. *Barnes*

* Related courses in other departments include—BOTANY: Anatomy, Plant Metabolism, Plant Water Relations, Physiology of Growth and Development; BIOCHEMISTRY: Introductory Biochemistry, Chemistry of Natural Products; CHEMISTRY: Organic Chemistry, Chemical Instrumentation.

Pathology

222. *Biology of Forest Insects and Diseases.* 4 units. *Anderson and Stambaugh*

223. *Forest Pathology.* Prerequisites: Botany 1 and 2, or equivalent. 3 units. *Stambaugh*

321. *Phytopathological Technique in Forestry.* Prerequisite: Forestry 223 or equivalent. 4 units. *Stambaugh*

322. *Microbiology of Forest Soils.* Prerequisites: Forestry 223, and mycology or bacteriology is recommended. 3 units. *Stambaugh*

385. *Seminar in Forest Protection.* Prerequisites: Forestry 223 and 230. 1 unit. *Anderson and Stambaugh*

* Related courses in other departments include—BOTANY: Mycology, Plant Water Relations, Physiology of Growth and Development, Cytology, Genetics; CHEMISTRY: Organic Chemistry; ZOOLOGY: Biological Nucleonics; BIOCHEMISTRY: Introductory Biochemistry.

Entomology

222. *Biology of Forest Insects and Diseases.*

230. *Forest Entomology.* Prerequisite: Forestry 222 or equivalent or consent of instructor. 3 units. *Anderson*

233. *General Entomology.* Prerequisites: one course in entomology or zoology or consent of the instructor. 4 units. (Not 1969-70). *Anderson*

331. *Toxicology of Insecticides.* 3 units. *Anderson*

332. *Ecology of Forest Insects.* Prerequisite: one course in entomology or zoology or consent of the instructor. 3 units, 4 units with laboratory. *Anderson*

335. *Entomological Research Techniques.* 1 unit. *Anderson*

385. *Seminar in Forest Protection.*

* Related courses in other departments include—ZOOLOGY: Ecology, Systematic Zoology, Radiation Biology, Biological Nucleonics, Cellular Physiology, Invertebrate Embryology, Genetics; CHEMISTRY: Organic Chemi try; BIOCHEMISTRY: Introductory Biochemistry; BOTANY: Bacteriology; MICROBIOLOGY AND IMMUNOLOGY: Microbiology.

Environmental Science

309, 310. *Environmental Seminar.* Prerequisite: 2 units. *Ralston and Knoerr*

Soils

261. *Forest Soils.* Prerequisites: Chemistry 1 and 2, and Physics 1, or equivalents; physical geology, mineralogy, petrology, and analytical chemistry are also desirable. 3 units. *Ralston*

362. *Forest Soil Physics.* Prerequisite: Forestry 261. 3 units. *Ralston*

364. *Soil Classification and Mapping.* Prerequisite: Forestry 261. 3 units. *Ralston*

366. *Forest Soil Fertility.* Prerequisites: Forestry; 261 with analytical chemistry recommended. 3 units. (Not 1969-70). *Ralston*

* Related courses in other departments include—BOTANY: Plant Water Relations, Physiology of Growth and Development; BIOCHEMISTRY: Introductory Biochemistry; CHEMISTRY: Chemical Instrumentation, Elements of Theoretical Chemistry; GEOLOGY: Sedimentary Minerals.

Meteorology

203. *General Meteorology.* 3 units. *Knoerr*

304. *Atmospheric Turbulence and Diffusion.* Prerequisites: Forestry 241 and differential equations or consent of instructor. 3 units. (Not 1969-70) *Vukovich*

306. *Dynamics of Local Atmospheric Motion.* Prerequisites: Forestry 203 and differential equations, or consent of instructor. 3 units. *Vukovich*

308. *Topics in Biometeorology.* Prerequisite: Forestry 203 or equivalent and permission of instructor. 3 units. *Knoerr and Barnes*

344. *Micrometeorology.* Prerequisite: Forestry 203 or equivalent, calculus. 3 units. (Not 1969-70.) *Knoerr*

* Related courses in other departments include—MECHANICAL ENGINEERING: Fluid Mechanics, Thermodynamics, Heat Transfer, Transport Phenomena, Boundary Layer Theory; MATHEMATICS: Applied Mathematical Analysis, Numerical Analysis; CHEMISTRY: Physical Chemistry, Chemical Instrumentation; BOTANY: Ecology, Plant Water Relations.

Hydrology

342. *Hydrologic Processes.* 3 units. *Knoerr*

* Related courses in other departments include—CIVIL ENGINEERING: Hydrology, Incompressible Fluid Flow, Mechanics of Fluids; MECHANICAL ENGINEERING: Transport Phenomena; MATHEMATICS: Applied Mathematical Analysis, Numerical Analysis; Chemistry: Physical Chemistry, Chemical Instrumentation; BOTANY: Ecology, Plant Water Relations.

Resource Economics and Management

Economics and Policy

269. *Resource Economics and Policy.* 3 units. *Staff*

270. *Economics of Forestry.* Prerequisite: at least one course in the principles of economics. 3 units. *Staff*

378. *Seminar in Forest Economics.* Prerequisites: Forestry 270 and 379 or consent of the instructor; advanced courses in economics and economic theory are desirable. 2 units. *Staff*

379. *Economic Analysis in Forestry.* Prerequisite: Forestry 270 or consent of instructor. 3 units. *Staff*

* Related courses in other departments include—ECONOMICS: Economic Theory, History and Systems; Economic Development, Plannning and Fluctuation; Economic Statistics; Monetary and Fiscal Theory and Institutions; International Economics; Manpower, Labor and Population; Industrial Organization and Public Policy; BUSINESS ADMINISTRATION: Business Finance, Marketing, and Accounting.

Management

244. *Theory and Practice of Silviculture.* Prerequisite: Forestry 243 or equivalent. 3 units. *White*

256. *Forest Measurements.* 4 units. *White*

281. *Forest Management.* 3 units. *Chaiken*

283. *Fire Behavior and Use.* 2 units. *Chaiken*

289. *Interpretation of Aerial Photographs.* Corequisite: Forestry 28 or equivalent. 3 units. *Chaiken*

382. *Legal Aspects of Forestry.* 1 unit. *Chaiken*

386. *Seminar in Forest Management.* Prerequisites: Forestry 244, 281 and 379 or equivalent. 1 unit. *Chaiken*

* Related courses in other departments include—BUSINESS ADMINISTRATION Theory of Firm, Organization Theory, Information Systems, The Firm in Society POLITICAL SCIENCE: Public Administration; SOCIAL SCIENCE: Social Stratification, Industrial Sociology.

Statistics and Operations Research

210. *Analytical Techniques in Forest Utilization.* 3 units. *Yandle*

250. *Biometry.* 3 units. *Yandle*

251. *Theory and Methods for Sampling Biological Populations.* Prerequisite: Forestry 250 or consent of instructor. 3 units. *Yandle*

253. *Computer Science in Natural Resources.* 1 unit. *Braaten*

258. *Operations Research.* 3 units. *Braaten*

352. *Theory and Applications of Linear Statistical Models.* Consent of the instructor. 3 units. *Braaten*

353. *Design and Analysis of Experiments.* Prerequisite: Forestry 352 3 units. *Braaten*

* Related courses in other departments include—MATHEMATICS: Calculus Numerical Analysis, Complex Analysis, Non-parametric Statistics, Probability, Applied Mathematical Statistics, Stochastic Processes, Multivariate Statistics; ECONOMICS: Econometrics, Quantitative Analysis.

Special Studies and Research

299. *Special Studies in Forestry.* Credits and hours to be arranged *Staff*

301, 302. *Advanced Studies in Forestry.* Credits and hours to be arranged. *Staff*

357, 358. *Research in Forestry.* Credits to be arranged.

1. *Forest Ecology.* Prerequisite: Forestry 243 or equivalent. *Wood*
2. *Forest Soils.* Prerequisite: Forestry 261 or equivalent. *Ralston*
3. *Silviculture.* Prerequisites: Forestry 243 and 244, or equivalents *White*
4. *Forest Management.* Prerequisite: Forestry 281 or equivalent *Chaiken*
5. *Forest Economics.* Prerequisite: Forestry 270 or equivalent. *Staf*

6. *Wood Anatomy and Properties.* Prerequisites: Forestry 249 and 290 or equivalents. *Harrar*
7. *Forestry Mensuration and Biometry.* Prerequisites: Forestry 250 and 352 or equivalents. *Yandle and Braaten*
8. *Forest Entomology.* Prerequisite: Forestry 230 or equivalent. *Anderson*
9. *Forest Operations Research.* Prerequisite: consent of instructor. *Yandle and Braaten*
10. *Dendrology.* Prerequisite: Forestry 249 or equivalent. *Harrar and White*
11. *Forest-Tree Physiology.* Prerequisite: plant physiology, plant or forest ecology. *Kramer, Hellmers, and Barnes*
12. *Forest Pathology.* Prerequisites: plant physiology and Forestry 223 or equivalents. *Stambaugh*
13. *Forest Meteorology and Hydrology.* Prerequisites: Forestry 203, 342, or equivalents. *Knoerr*
14. *Forest Biochemistry.* Prerequisites: plant physiology, organic chemistry. *Barnes*

368. *Field Seminars.* Credits to be arranged. *Staff*

Graduate School of Arts and Sciences

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General Information

The Duke University Graduate School

In surveying the progress made in the first seven years after the founding of Duke University, its first President, William Preston Few, wrote that he wanted "to see the Graduate School made strong because it will best and most quickly insure our attaining and maintaining a place of real leadership in the educational world." President Few believed that "more than anything else here our Graduate School will determine the sort of University we are to build and its standing in the educational world." These opinions have continued to prevail to the present day, with emphasis upon the interdependence of teaching and research as the necessary components of scholarship.

Four hundred members of the graduate faculty in 31 disciplines teach the approximately five hundred courses and seminars offered in the Duke University Graduate School, and supervise thesis and dissertation research. Many of the major universities of the world have helped to train this faculty; approximately 90 per cent of the graduate staff hold degrees from the forty-one institutions which make up the Association of Graduate Schools within the Association of American Universities. By place of birth they represent almost every state in the Union and almost two dozen foreign countries.

The fifteen hundred graduate students currently enrolled represent a similar diversity in background. Approximately 48 per cent of the stu-

dents recently completing degrees are from undergraduate colleges in the Southeast, 18 per cent are from the Middle Atlantic states, 11 per cent from the Central states, 10 per cent from New England, 3 per cent from the Far West, 1 per cent from the Southwest, 1 per cent from the Northwest, and 8 per cent from foreign countries. The old maxim that a university is only as good as its faculty might be amended by adding "and no better than its student body." No professor can *give* his wisdom to a student, and no student can *take* his understanding from another. This must be a reciprocal process between professor and student, and between student and student. The groundwork for learning may be laid in privacy—indeed a certain amount of private study and research is absolutely essential—but the vital stimulus to the learning process comes from one's contact with the minds of other men with similar or related interests. This is precisely why graduate schools are highly selective in their admissions policy, and it is one of the important reasons why they are willing to offer attractive fellowship awards to outstanding students. The superior student is a catalyst both for his fellow students and for his faculty, and is prized as such.

Faculty and students comprise the essential human factors in education, but their joint endeavor cannot prosper without adequate research and library facilities. Duke University is particularly fortunate in regard to research facilities, for the physics, botany, zoology, psychology, engineering and biochemistry laboratories have been entirely built within the last twenty years, and modernization and expansion have occurred in other scientific areas. It is also the University's pride that it has one of the finest research libraries, the seventeenth largest university library in the nation today, second in the South, and first in the Southeast. In number of volumes, breadth of coverage, serials, and documents, it is a much more adequate library than that available in many graduate schools with enrollment two or three times as large. To the student in the arts, humanities, and social sciences, for whom the library is the bloodstream of scholarship, this is an immeasurable asset.

Among the many special features of the Graduate School may be mentioned a few of importance to various graduate programs. For students in the biological sciences, the facilities of the Duke Marine Laboratory at Beaufort, North Carolina, are available for course work and research. The Laboratory has research buildings, class rooms, living quarters, and motor vessels, includng the 118-foot oceanographic ship, the R/V *Eastward*, which make it one of the best research centers in marine biology in the country. Closer to home are approximately 8,500 acres of the Duke Forest, managed by the School of Forestry, ideal for research on timber growth, soils, and related topics. A phytotron has recently been completed. Students in both the physical and the life sciences frequently avail themselves of the facilities of the Oak Ridge

Institute of Nuclear Studies, of which Duke is one of the sponsoring universities.

In the social sciences the Center for Commonwealth Studies is internationally recognized for its graduate training and research program. It is today one of the major centers in the world, from the point of view of both faculty and library resources, carrying on studies of the various areas of the British Commonwealth. The Center is a cooperative enterprise of the Political Science, Economics, and History departments. Other important graduate programs with an international orientation focus on Europe, South Asia, Sub-Sahara Africa, and South America.

Other special teaching or research programs include the Lilly Endowment program in Christianity and the social order, jointly conducted by the departments of Political Science and Religion; the Ford Foundation-sponsored program in gerontology, conducted by the departments of Sociology and Economics; a joint program in the anatomical, physiological, and psychological aspects of behavior, with support under the National Defense Education Act; a research workshop on economic development for advanced students; and numerous others such as the Cooperative Programs with the University of North Carolina in the Humanities and in Slavic Studies. Duke is also fortunate in having excellent Medical, Law, Engineering, Forestry, and Divinity Schools on its main campus, thus making many additional facilities available for course or research work related to the graduate curricula in the arts and sciences. A two-term Summer Session and the availability of courses at the nearby University of North Carolina and North Carolina College under a cooperative arrangement offer other opportunities to the graduate student.

* * * * *

No description of programs can begin to give the prospective student the full flavor of graduate study in a particular institution. The Duke Graduate School offers a warm invitation to interested students to visit the campus during the year in order to discuss their possible application and admission. The visitor will find at Duke most of the facilities that one could hope for in the largest of institutions, and yet the University has been fortunate in avoiding many of the evils inevitable with mass education. Despite the total University enrollment of approximately 8,000, Duke has retained the sense of community that one usually associates with a smaller liberal arts college. And in an age when current architectural whim often adds yet one more variant style to an already assorted array of buildings, Duke has built with foresight and design a campus of unusual beauty. This, too, is an important part of the fabric of education, helping to create an environment conducive to learning.

Courses of Study and Requirements for Degrees

The Graduate School of Duke University now offers the following degrees: Master of Arts (A.M.), Master of Science (M.S.), Master of Education (M.Ed.), Master of Arts in Teaching (M.A.T.), Master of Hospital Administration (M.H.A.), Doctor of Philosophy (Ph.D.), and Doctor of Education (Ed.D.). A program leading to the Master of Business Administration (M.B.A.) is scheduled to begin in September, 1970.

The Master's Degrees

To be considered as a candidate for a Master's degree (A.M., M.S., M.Ed., M.A.T., M.H.A.), the graduate student must (1) have made passing grades in the first 12 units of course work, (2) have made a grade of *G* or *E* on at least 3 units of this work, and (3) have received the approval of the major department (or in the case of the M.A.T., of the supervisory committee).

Residence Requirements

Candidates for all Master's degrees must spend, as a *minimum*, one full academic year, or its equivalent in Summer Session terms, in residence at Duke University. Those who wish to complete their degrees

wholly in the Summer Session must be in residence for five terms. Depending upon the degree program pursued and the individual student himself, additional time frequently proves necessary. (See section on Residence under Academic Regulations.)

Transfer of Graduate Credits

Under certain circumstances a maximum credit of 6 units may be allowed for graduate courses completed elsewhere. Units from other institutions for such cases will normally be transferred only if the student has received for them a grade of B (or its equivalent) or better. In any case, the transfer of graduate credit does not reduce the required minimum registration for a master's degree at Duke. In planning a master's program, a student who wishes to transfer up to six units into his program must nevertheless register at Duke for units equivalent to the number he is transferring.

With the approval of both the student's major department and the Dean of the Graduate School, a student who is granted such transfer credit may be permitted to register for as much as 12 units of thesis research instead of the usual 6 units, or he may be permitted to fill out his schedule with as much as 6 units of further undergraduate training or 6 units of required language courses on the undergraduate level. In no case will credit be allowed for extension or correspondence courses.

Time Limits for Completion of Master's Degrees

The Master's degree candidate who is in residence for consecutive academic years should complete all requirements for the degree *within two calendar years* from the date of his first registration in the Graduate School. *Any candidate* must complete all requirements *within six calendar years of his first registration.*

To be awarded a degree in June the student must have completed all requirements, including the recording of transfer credit, by the last day of the final examination period. If a thesis is one of the requirements, it must be submitted to the Graduate Office by May 1. Candidates for degrees in the Graduate School desiring to have their degrees conferred on September 1, must have completed all requirements as of the final day of the Duke University Summer Session. A candidate completing degree requirements after that date will have his degree officially conferred at the following June Graduation Exercises. (Transfer of credit for work completed at other universities must be recorded by September 15.)

The Thesis

The thesis should demonstrate the student's ability to collect, arrange, interpret, and report pertinent material on his special research problem.

Although a publishable document is not required, the thesis must be written in an acceptable style and should exhibit the student's competence in scholarly procedures. Requirements of form are set forth in the Duke University *Manual of Style for Theses and Dissertations,* revised 1961, obtainable at the Duke University Book Store.

Master of Arts

The Master of Arts degree may be earned either with or without presentation of a thesis. Whether or not a student writes a thesis, however, certain general requirements must be met. If the Master's degree requirements are not specified in the departmental heading of this *Bulletin,* a prospective student should inquire directly from the appropriate Director of Graduate Studies.

Prerequisites

As prerequisites to graduate study in his major subject, the student must have completed a *minimum* of 24 semester hours—12 semester hours of approved college courses in that subject, and 12 additional semester hours in that subject or in related work. Since some departments require more than 12 semester hours, the student should read carefully the special requirements listed by his major department, which are included as headnotes to the course offerings in this *Bulletin.*

Language Requirements

The candidate for the A.M. degree must have a reading knowledge of at least one ancient or modern foreign language. (The several departments reserve the right to specify which foreign languages are acceptable.) For methods of satisfying language requirements, see p. 63. The language requirements must be satisfied before the Master's examination is taken.

Major and Minor Subjects

In his graduate work the student must present acceptable grades for a minimum of 24 units of graduate courses. Of these, at least 12 units must be in the major subject. A minimum of 6 units must be in a minor subject or related fields which are approved by his major department. The remaining 6 units of the required 24 may be taken in either the major or minor department, or in another approved by the major department and by the Dean of the Graduate School. The nature of the additional 6 units for which he must register depends on whether he is enrolled in a thesis or non-thesis program; i.e., these last 6 units are earned either with successful submission of the thesis or with such other

courses or academic exercises as are approved by the student's department. (See options below.) His earned credit for the degree totals a *minimum* of 30 units.

Options for Completing the Program

With Thesis

Preparing the Thesis. All basic requirements for preparing the thesis are described in the *Manual of Style for Theses and Dissertations,* revised 1961, obtained at the Duke University Book Store, West Campus. The quality of paper, form, and binding are prescribed in the *Manual.*

Submitting the Thesis. Four typewritten copies of the thesis bound in snap binders secured through the Graduate School Office must be submitted in approved form to the Dean of the Graduate School on or before May 1 for a June degree, or August 15 for a September degree, and at least one week before the scheduled date of the student's examination. The copies will then be distributed by the student to the several members of the examining committee. Two copies for the Library and one for the adviser will be bound by the Ruzicka Bindery, fee $5.00 a volume. The student will state whether or not he wishes more than three so bound.

Without Thesis

The options with which a Master of Arts degree may be completed without presentation of a thesis are determined by the individual departments. Normally a student's committee makes its decision on his degree program after he has completed at least 9 units of graded course work. Beyond the 24 units required in major and minor course work, 6 units may be earned either with additional course work or with other equivalent academic exercises approved by the student's department and committee. Such academic exercises might include an additional 3 units of graded course work supplemented by, e.g., the following: (1) passing an oral examination on a 3-5-page research prospectus plus a substantial bibliography on a topic within the student's major field, or, (2) successful submission to the committee of two carefully revised term papers, preferably written originally for different instructors and originally earning a grade of G or higher. In any case, the student's total minimum registration will be for 30 units of work, followed by a final examination (see below).

The Examining Committee and the Examination

The instructor who directs the student's program appoints an examining committee composed of himself and two other members of the Graduate Faculty, one of whom must be from a department other than that of the major. If the student has been permitted to take related work

within the major department, the third member may represent the minor field within the department. This committee is submitted for approval to the Dean of the Graduate School at least one week preceding the final examination.

The student's committee administers the examination and certifies whether the student has passed or failed by signing the card provided for this purpose by the Graduate Office. This card is used to indicate completion of all requirements for the degree. If a thesis is presented, the committee also signs all copies of the thesis, and the candidate then returns the original, the first two carbon copies, and any other copies he wishes bound by Ruzicka, to the Dean of the Graduate School, who deposits them in the University Library.

Filing the Intention to Graduate

On or *before March 1 for a June degree* or on or *before August 1 for a September degree,* the student must file with the Dean of the Graduate School, on the official form, a declaration of intention to graduate. If degree requirements have been met before the deadlines above, the intention to graduate must be filed one month before the final examination. The declaration of intention gives the title of the thesis or other academic exercises on which the degree candidate will be examined. The declaration must have the approval of the Director of Graduate Studies in the major department, and of the student's committee chairman.

Master of Science

The degree of Master of Science is offered in the three fields of Engineering—Civil, Electrical, and Mechanical—and in Forestry.

Prerequisites—Engineering

As prerequisites to this degree, the student must have earned a Bachelor's degree from an accredited engineering college and have completed a minimum of 12 semester hours of work in the major field.

Prerequisites—Forestry

As prerequisite to this degree, the student must have earned a Bachelor's degree which represents an undergraduate program in forestry or an allied field.

Language Requirements

For the Master of Science degree no foreign language is required.

Major and Minor Subjects—Engineering

The work for the Master of Science degree is designed to provide a broad foundation in the fields of civil, electrical, and mechanical engineering. The student must present acceptable grades for a minimum of 24 units of graduate courses: at least 12 in course work in his major area of concentration in engineering (not necessarily confined to the offerings of the engineering department in which the student is registered); a minimum of 6 units in a minor subject outside of engineering which lends broad support to his program (usually in mathematical or natural sciences); and the remaining 6 of the 24-unit course requirement in either the major or minor subject, or in an area approved by the major department and by the Dean of the School of Engineering. The nature of the additional 6 units for which he must register depends on whether he is enrolled in a thesis or non-thesis program, i.e., these last 6 units are earned either with successful submission of the thesis or with such other courses or academic exercises *as are approved by the student's department.* His earned credit for the degree totals a minimum of 30 units.

Major and Minor Subjects—Forestry

The work for the Master of Science degree is designed to provide a basic foundation in a fundamental area of forestry or in a field closely allied with forestry. A minimum of 30 units of credit is required for the degree of which 24 units must be in formal courses. Specific course requirements call for a minimum of 12 units in a major field of specialization and 6 units in a minor area of concentration. The major and minor fields are determined without regard to departmental divisions of the University if the interdisciplinary nature of the area of specialization makes such a program of study advisable. The specific program of study is developed by the major professor (thesis supervisor) subject to the approval of the Director of Graduate Studies in Forestry and the Dean of the Graduate School.

Thesis and Examination

The regulations and options for completing the program and the provisions for examination and an examining committee are the same as those for the Master of Arts degree discussed in the previous section. However, the Department of Forestry requires a thesis for completion of the M.S.

Master of Education

Prerequisites

Before a student is admitted to graduate study for this degree, he should have completed, on the undergraduate level, a minimum of 18 semester hours of approved work in Education.

Before the degree is conferred the student must have had one year of actual teaching experience, or have met certification requirements by supervised student teaching in an accredited school. Such supervised student teaching may be at either the undergraduate or the graduate level.

The Thesis

The Master of Education degree may be earned either with or without a thesis.

Without thesis. The required work includes a departmental major (Administration, Counseling, Elementary Education, Secondary Education, or Teaching the Emotionally Disturbed) of at least 12 units, and a minor of at least 6 units outside the Department of Education. The remaining 12 units are elective within the area of Education and the minor field, but require the approval of the student's major adviser and the Director of Graduate Studies.

Toward the end of his residence the student must pass a comprehensive examination on his departmental major. This examination shall be prepared and conducted by the instructors of the student's major as designated by the Director of Graduate Studies of the Department of Education. Request to take this examination should be made to the Director of Graduate Studies at least two weeks before the date on which the examination is to be conducted.

With thesis. Students who elect this plan are permitted to substitute a thesis for 6 units of the required course work. The thesis subject must be approved by the instructor who is to direct it, and by the Director of Graduate Studies.

In addition to the thesis, the student must present at least 24 units of course credit. Of these, 12 units must be taken in the student's departmental major. Six units, constituting a minor, must be taken outside of the Department of Education. The remaining 6 units are elective within the area of Education and the minor field, but require the approval of the student's major adviser and the Director of Graduate Studies.

The regulations governing the thesis are the same as those for the Master of Arts degree.

Recommendation for Teacher Certification

Elementary school teachers who already hold certificates and who desire the recommendation of Duke University for a graduate teaching certificate must include in their Master's program a minimum of 12 semester hours in subjects ordinarily taught in elementary school and 12 semester hours in education courses designed to improve them as elementary school teachers.

Master of Arts in Teaching

Prerequisites

The degree of Master of Arts in Teaching is designed for teachers already in service and for recent graduates of liberal arts colleges who wish to teach in a public school, private school, or junior college.

A student should normally have completed a minimum of 12 semester hours in his proposed major subject and an additional 12 semester hours in that or related subjects. Should a student wish to undertake a graduate major different from his undergraduate major, the prerequisites may be modified upon the recommendation of the student's committee and the approval of the Dean of the Graduate School.

Programs for the Degree

Either of two programs may be arranged, in consultation with the student's committee. In both programs a *minimum* of 30 units is required.

1. A major in Education of 18 to 24 units and 12 to 18 units in non-education courses (for students seeking certification): a total of 36 units.
2. A major in non-education courses of 18 to 24 units and 6 to 12 units in Education (for students already certified): a total of 30 units.

The non-education courses are to be taken in one or more subjects ordinarily taught in the secondary schools. The amount and distribution of this work will be determined by the needs of the individual student. A major in Biological Sciences or in Physical Sciences is possible in this program. Teachers who have already completed certification requirements must major in a teaching field in their Master of Arts in Teaching program. Students who have not completed certification requirements must major in education.

The Master of Arts in Teaching may be earned with or without the presentation of a thesis. If a student, in consultation with his committee, elects to present a thesis, 6 units of the total of 30 units required will be allotted to thesis research. He will then be required to complete 24 units of course credits. The regulations governing the thesis are the same as those for the A.M. *with thesis.* Candidates for the Master of Arts in Teaching who have not had teaching experience are required to take Education 215-216 or 315-316, in which case a minimum of 36 units is required.

The Committee

Each candidate for the degree will be assigned a committee, appointed by the Director of Graduate Studies in the major department or area. This committee will consist of three members, at least one of whom will be from the Department of Education, and at least one from another

department. The chairman of the committee will normally be chosen from the department of the major.

Recommendation for Teacher Certification

Secondary school teachers who already hold certificates and desire the recommendation of Duke University for graduate teaching certificates must include in their Master's program a minimum of 18 semester hours in their teaching fields and 6 semester hours in courses in education designed to improve them as secondary school teachers.

Master of Hospital Administration

Prerequisites

The Master of Hospital Administration degree is designed for persons intending to pursue a career of management in hospitals and other health agencies.

No specific undergraduate major is required for participation in graduate studies leading to this degree, but certain courses are prerequisites:

2 semesters of natural sciences
2 semesters of economics or political science, or 1 semester of each
2 semesters of psychology or sociology, or 1 semester of each
2 semesters of accounting, either basic or managerial

In selected cases, students who have not completed all prerequisites may be admitted on a conditional basis subject to completion of deficiencies while completing other requirements of the degree program.

Program for the Degree

The program for this degree includes 36 graduate units, of which 18 are in courses in Hospital Administration and 18 are in designated courses in Business Administration, Economics, Political Science, and Sociology.

Completion of this program ordinarily requires 24 months. Included is a 12-month administrative residency which is conducted under faculty supervision in hospitals and other health agencies within commuting distance of the University campus. A portion of the residency is devoted to preparation and presentation of a written management study.

Comprehensive Examination

Successful completion of a comprehensive examination, consisting of both oral and written phases, is a prerequisite qualification for the M.H.A. degree.

Master of Business Administration

Prerequisites

The Master of Business Administration is designed for students who desire professional careers as managers of economic enterprises in which a high order of creative analysis and planning is needed. The teaching approach used in the M.B.A. curriculum is focused on the theoretical foundations that underlie the techniques of management science.

An undergraduate experience, including at least one year of the calculus and other course work in which the applicant has demonstrated ability to engage in rigorous analysis, is necessary for admission.

Program for the Degree

The M.B.A. program contains a prescribed core of courses dealing with tools of analysis and the fundamental theoretical foundations for demanding administrative practice. In addition, each candidate elects a set of courses to prepare more specifically for his chosen professional practice.

The M.B.A. requires four semesters of full-time work, totaling 60 units of graduate course credit. (See Business Administration section under Courses of Instruction for a more detailed description of the degree requirements.)

Language, Thesis, and Minor Subjects

The M.B.A. program has neither a language nor a thesis requirement. No formal minor subject is required. An experience in research and formal writing normally will be obtained in the practicum described in the list of courses.

Examinations and Graduation

On or before March 1, candidates for a June M.B.A. degree are notified of their graduation status, and those students expected to complete the requirements for the degree file their intention to graduate with the Dean of the Graduate School. Any student required to take Master's examinations will be so notified by March 1.

The Doctor's Degrees

Doctor of Philosophy

The Ph.D. degree is essentially a research degree. Although course work is a necessary part of the student's program, the mere accumulation of course credits will not be sufficient for attaining this degree. The granting of the Ph.D. is based primarily upon the student's knowledge of a specialized field of study and upon the production of an acceptable dissertation embodying the results of original research.

Requirements for the Ph.D. Degree

The formal requirements, discussed in detail below, for the Ph.D. degree are as follows: (1) foreign languages; (2) major and minor courses; (3) supervisory committee for program of study; (4) residence; (5) preliminary examination; (6) dissertation; (7) final examination. In order to be considered for candidacy for the Ph.D. degree, the student must have passed all of his course work in the first year of graduate study; on at least 9 units of course work in the first year he must have made a grade of *G* or better.

Foreign Languages

A reading knowledge of two acceptable foreign languages is required. (For acceptable languages and methods of meeting this requirement, see Language Requirements.)

A student working toward the doctoral degree should complete the language requirements for that degree by the end of his first year of residence. If he fails to meet these requirements by the end of his third semester of residence, he must register in the appropriate special reading course or courses until he has satisfied the requirements.

The foreign language requirement must be met before preliminary examinations are taken.

Major or Minor

The student's program of study necessarily demands substantial concentration on courses in his major department. It may, however, include a minimum of six units in a minor subject or related fields approved by his major department. Use of related fields within the major department requires the approval of the Dean of the Graduate School.

Committee to Supervise the Program of Study

As early in a student's course of study as is practicable and *not later than two months before the preliminary examination* the Director of Grad-

uate Studies in the major department will nominate for the approval of the Dean a supervising committee of five, one being designated as chairman. This committee will include at least three members of the major department and one from the minor if a minor is involved. This committee will draw up a program of study and administer the preliminary examination and, with such necessary changes as are approved, the final doctoral examination. However, should all members of the committee be from the major department, at least one member of another department will be added or substituted for the final doctoral examination. The final examination may be administered with a minimum of four members.

When the preliminary examination is arranged, the committee and the Director will submit to the Dean the student's program of study bearing a statement that the Department's course and language requirements have been or are being completed.

Residence

The *minimum* registration requirement is 60 units of graduate credit not more than 30 units of which may be accepted by transfer. Since a full program is 30 units per academic year, the prospective Ph.D. candidate who enters with the A.B. or B.S. degree must plan to spend in residence a *minimum* of two academic years; if he enters with the A.M., his *minimum* residence is one academic year. (For the definition of *residence*, see the section on Residence under Academic Regulations.) If there are undergraduate deficiencies in his program, he may in addition to the minimum requirements be required to take preliminary undergraduate courses for which he will not receive graduate credit. Even if there are no such undergraduate deficiencies, the student's supervisory committee will determine what requirements if any above the minimum the student must meet.

Credit for Summer Work. Credit earned in the Summer Session will not reduce the minimum required residence (see section on the Summer Session).

Time Limitations

1. At the time that the preliminary examination is passed any courses, language certifications, or other credits for advanced standing which are more than six calendar years old will not be accepted toward fulfilling the minimum requirements of the doctoral degree.

2. The student should normally pass the preliminary examination by the end of his second year of graduate study. If he has not passed it by the middle of the third year, he must file with the Dean of the Graduate School a statement explaining the delay and setting a date for the examination. Except under unusual circumstances, extension will not be granted beyond the end of the third year.

3. The doctoral dissertation should be submitted and accepted within two calendar years after the preliminary examination is passed. Should the dissertation not be submitted and accepted within four years after the examination, the candidate, with the approval of his committee, may petition the Dean of the Graduate School for an extension of one year. Should this extension be granted and the dissertation not be submitted and accepted within the year, the student must pass a second preliminary examination to remain a candidate for the degree. In such a case, the time limit for submitting the dissertation will be determined by the Dean of the Graduate School and the candidate's committee.

Preliminary Examination

A student is not accepted as a candidate for the Ph.D. degree until he has passed the preliminary examination. A transfer student who may have passed a preliminary examination elsewhere must nevertheless take the examination in this Graduate School. The examination ordinarily covers both the major and minor fields.

In the summer, a preliminary examination may be scheduled only between the opening and closing dates of the Summer Session.

Privilege of Re-Examination. Should the student fail the preliminary examination, he may apply, with the consent of his supervisory committee and of the Dean of the Graduate School, for the privilege of a second examination to be taken no sooner than three months after the date of the first. Failure on the second examination will render the student ineligible to continue his program for the Ph.D. degree at Duke University.

Reduction in Registration. Because the student who passes the preliminary examination is eligible for a reduction in required registration, he should assume responsibility for prompt notification of the decision to the Graduate School Office.

The Dissertation

The dissertation is expected to be a mature and competent piece of writing, embodying the results of significant and original research.

Filing Title. One month before the dissertation is presented and not later than March 1 (March 2 if March 1 falls on Sunday) preceding the June commencement at which the degree is expected to be conferred, the student must file with the Dean of the Graduate School, on the official form to be obtained from the Graduate Office, the title of the dissertation. This title must receive the written approval of both the Director of Graduate Studies of the student's major department and the professor who directs the dissertation.

Form. The basic requirements for preparing the dissertation such as quality of paper, form, and binding are prescribed in the instructions for microfilming (see below) and in the *Manual of Style for Theses and Dis-*

sertations, revised 1961, to be obtained from the Duke University Book Store, West Campus.

Submitting Dissertation. The dissertation must be completed to the satisfaction of the instructor who directs it. Four typewritten copies bound in snap binders secured through the Graduate School Office must be deposited with the Dean of the Graduate School on or before *April 15* preceding the June commencement when the degree is to be conferred. The dissertation must be submitted to the Graduate Office at least seven days before the scheduled date of the student's examination.

Publication on Microfilm. All doctoral dissertations are published on microfilm through University Microfilms, Ann Arbor, Michigan. Authors may, if they wish, also copyright them. The abstract will be published in *Dissertation Abstracts.*

In brief, all copies of the dissertation, the original in clean type, will remain unbound except for spring binders. Ten copies of an *abstract,* carefully written and not more than 600 words long, are submitted when the dissertation is first presented to the Graduate Office. A non-returnable dissertation fee of $25 is charged for microfilming. If copyright is desired, an additional fee is charged. The original and two copies will be bound by the Ruzicka Bindery. The fee is $5.00 per volume. The student may request that more than the three copies be so bound.

Final Examination

The final oral examination shall be primarily on the dissertation. Questions may, however, be asked in the candidate's major field. Except in unusual circumstances approved by the Dean a final examination will not be scheduled when school is not in session.

If a student fails his final examination, he may be allowed to take it for a second time, but not sooner than six months from the date of his first. Permission to take the second examination must be obtained from the instructor who directed the dissertation and from the Dean of the Graduate School. Failure to pass the second examination renders the student ineligible to continue work for the Ph.D. degree at Duke University.

Deposit of the Dissertation

After passing the examination, the candidate brings to the Graduate Office the original and first two carbon copies of the dissertation, properly signed, and any other copies he wishes bound by Ruzicka. At this time he signs the microfilming agreement and pays such binding, microfilming, and copyright fees as are due.

Doctor of Education

The Doctor of Education degree is a professional degree planned for those who are, or intend to become, school administrators, supervisors, directors of instruction, curriculum consultants, college teachers of education, or other professional personnel.

Requirements for the Ed.D. Degree

The candidate for the Ed.D. degree must meet the same requirements as the candidate for the Ph.D. degree. In addition to these uniform requirements, the candidate for the Ed.D. (1) must have had at least two years' experience in educational work; (2) must present strong letters of appraisal and recommendation from persons well qualified to speak with authority of his abilities; and (3) must present himself, if possible, for a personal interview. The Standing Committee on the Ed.D. degree reserves the right to insist upon an interview.

Persons who are primarily concerned with meeting requirements set by North Carolina for the advanced certificate for principals and supervisors must request and secure admission for doctoral study.

Residence Requirements

Regulations concerning residence requirements, grades required during the first year of graduate study, and the preliminary examination are the same as those for the Ph.D. (See Section on Doctor of Philosophy.)

Foreign Languages

There are no foreign language requirements for the Ed.D. degree.

Program of Work

The candidate for the Ed.D. degree will choose as his major field either Educational Administration and Supervision or Curriculum and Instruction.

Candidates in Administration and Supervision will take approximately 24 units in that field. In addition, they will take approximately 18 units in other professional courses, and a minor of approximately 18 units approved by the candidate's supervisory committee and the Standing Committee on the Ed.D. degree.

Candidates in Curriculum and Instruction will take approximately 24 units in Curriculum and Instruction. In addition, they will take approximately 12 units in other professional courses, and a minor of approximately 24 units in the humanities, the natural sciences, or the social sciences, exclusive of professional education.

The program of work for each candidate must be approved by the Standing Committee for the Ed.D. degree.

Dissertation

The candidate must write a dissertation, for which the formalities of presentation, including its defense in a final examination, are the same as those for the Ph.D. degree. The dissertation must be a mature piece of writing embodying the results of significant and original research—in essence, a contribution to knowledge, or several closely related problems growing out of the student's professional responsibilities. In either case it must demonstrate the candidate's ability to investigate and report on a significant phase of education in his major field.

Publication on Microfilm. The dissertation will be published on microfilm, as is the dissertation for the Ph.D.

Final Examination

Regulations for the final examination are identical with those of the Ph.D. degree.

Special and Cooperative Programs

Program in Comparative Studies on Southern Asia

The Program in Comparative Studies on Southern Asia was established at Duke University in 1961 following a grant from the Ford Foundation to the Center for Commonwealth Studies to enable it to develop a research and training program in that area. In 1963 the University entered into a contract with the United States Office of Education and sponsors a South Asian Language Training and Area Center under the provisions of Title VI of the National Defense Act. The basic purpose of this program is twofold: to facilitate research on the political, historical, economic and socio-cultural development of Commonwealth countries in Southern Asia (India, Pakistan, Ceylon, Malaysia and Singapore) and to provide for the systematic training of graduate students in economics, education, history, political science, and sociology-anthropology with special emphasis on the area.

The graduate student, in addition to meeting the requirements of the department in which he is enrolled, is expected to take Hindi-Urdu or another major South Asian language, and the cognate courses in other departments, and to undertake field research in the preparation of his dissertation.

The Program awards each year a limited number of pre-doctoral fellow-

ships under the conditions specified above. Awards carrying the same expectations are also made under the NDEA Title VI language fellowships offered by the United States Office of Education.

Facilitation and support of research activities by members of the Duke University faculty and graduate students are important aspects of the Program's activities. It supports through travel grants and subsistence allowances field research by persons affiliated with the University. Research grants for faculty and students are also available from the American Institute of Indian Studies and the United States Office of Education. Research facilities include those materials received as a result of the University's participation in a library acquisitions program under the terms of Public Law 480.

The Program has undertaken the publication of three series: hard-cover monographs, reprints of articles of note dealing with the Southern Asian region and a series of occasional papers. Inquiries should be addressed to the Executive Secretary, Program in Comparative Studies on Southern Asia, Duke University, Durham, North Carolina.

Hispanic Studies Program

The Graduate School offers an inter-departmental program of Hispanic studies leading to the A.M. and Ph.D. degrees. Students may write their theses and take their degrees in history, economics, political science, sociology, or Hispanic languages and literatures. The purpose of the program is to make possible desirable combinations of courses on the Hispanic world in these related disciplines and to bring to bear more strength of the faculty upon the training of a single candidate. This may be achieved through a judicious use of minors or by such special arrangements as may from time to time become necessary.

The Duke University Library holdings have been built up to facilitate graduate work and research in Hispanic-American cultural history, inter-American relations, economic history, politics, and Spanish-American literature. These collections are being constantly enlarged.

The Population Studies Program

The Population Studies Program at Duke University was established in 1963 as a joint enterprise of the Departments of Economics and Sociology and was charged with both educational and research functions in the area of Demography and Human Ecology.

Training under the auspices of the Program leads to a Ph.D. degree within the Departments of Sociology or Economics with a specialization

in Population Studies. Two training programs are available, one in each department. Each is designed to provide an integrated and cross-disciplinary training in the common speciality area of Population Studies.

In addition to cross-departmental courses, program unity is produced through a Population Studies Seminar. This Seminar, which is non-credit and informal, is attended by advanced students and by faculty in both departments. The Seminar provides briefing on demographic research conducted by both faculty and students in the two departments. It also serves as a vehicle for a number of visiting lecturers in demography each semester.

Graduate fellowships for students in the Program are available. Inquiries may be directed to the Director of Graduate Studies in either of the participating departments.

The Center for Southern Studies

The Center for Southern Studies in the Social Sciences and the Humanities at Duke University was formally opened July 1, 1965. It is not a degree-granting agency, but both the M.A. and the Ph.D. degree with a Southern area orientation may be earned through most of the departments associated with the Center. These are History, Economics, Political Science, Sociology and Anthropology, English, Education, and Religion. The general goal of the Center is the integration and promotion of human knowledge about the South in the areas represented by the associated departments. To this end the Center has formulated a program which includes public lectures, seminars, symposia, publications, travel, visiting lectureships, pre-doctoral and post-doctoral fellowships.

Oak Ridge Institute of Nuclear Studies

Duke University is one of the sponsoring universities of the Oak Ridge Institute of Nuclear Studies located at Oak Ridge, Tennessee. The graduate research program at Duke has available to it all the facilities of the Oak Ridge National Laboratory and the cooperative supervision of student research by the staff at Oak Ridge.

Fellowships in several fields of science are available to qualified applicants.

Graduate Fellowship Program. On application by a university the Institute awards fellowships to candidates for the master's and doctor's degrees. The student uses the fellowship to conduct his thesis research in an Oak Ridge laboratory.

AEC Special Fellowships. These are available in the fields of (1)

nuclear science and engineering, (2) health physics, (3) advanced training in health physics, and (4) industrial hygiene.

The application deadlines differ for different fellowships. Further information may be obtained from Lewis E. Anderson, Department of Botany.

Medical Scientist Training Program

The Medical School and the Graduate School cooperate in offering a program which leads to both the M.D. and the Ph.D. degrees. It is the purpose of this program to produce individuals competent both as clinicians and as basic scientists. Graduates of the program are expected to gravitate towards faculty positions in the medical schools of this country and to contribute significantly, through their research efforts, to the advancement of medical practice. Applicants to this program must satisfy the admissions requirements of the Medical School and of the science departments of the Graduate School and should be able to offer some evidence of a serious interest in basic research. Other things being equal, this program enables its participants to achieve both degrees in one year less than would be required to obtain them outside of this program.

The first two years of study are spent in the Medical School mastering the core curriculum of preclinical (first year) and of clinical (second year) sciences. The participants then devote full time to graduate studies in one of the basic science departments of the University. When the requirements for the Ph.D. are completed, the students return to the Medical School for an additional year of clinical experience and thus complete their requirements for the M.D. degree. Funds are available which provide for payment of stipends and tuition for the duration of the student's participation in this program. Six of the twelve students who enter this program each fall are fully funded in this manner. The remaining students are ordinarily provided with such funds only during the years spent in earning the Ph.D. degree.

Students enrolled in the Ph.D. phase of the M.D.-Ph.D. program are assessed full fees (based on the normal, 15-semester hour registration) in the Graduate School. These students, paying full fees in the Graduate School, are allowed to carry from one to four units in the Medical School at no extra fee. Students enrolled in the M.D. phase of the M.D.-Ph.D. program pay full fees in the Medical School. Such students, because of the nature of the elective program, may carry from one to six units in the Graduate School without extra fees.

Inquiries concerning this program should be directed to Dr. Irwin Fridovich, Associate Director, Medical Scientist Training Program.

Biomedical Engineering Program

The Graduate School offers an interdisciplinary program in biomedical engineering leading to the M.S. and Ph.D. degrees. Students write their theses and take their degrees in one of the engineering departments or physiology. The purpose of this program is to encourage the optimum combining of engineering and biomedical course work with an interdisciplinary research topic so that the graduates of this program can contribute at the most advanced professional level to the interdisciplinary field of biomedical engineering.

The major research areas available include: biomechanics; biomedical materials; biomedical modeling; data acquisition and processing; and neural networks. Information about graduate fellowships may be obtained from Dr. Theo C. Pilkington, Chairman, Division of Biomedical Engineering.

Materials-Fields-Mechanics Research Program

The Graduate School offers an interdisciplinary program in materials research leading to the M.S. and Ph.D. degrees. Students write their theses and take their degrees in one of the engineering departments but have access to the resources of an interdepartmental faculty, comprising the Materials Research Group. The purpose of the program is to encourage and facilitate research on the interactions of materials with various fields (stress, thermal, electromagnetic, fluid, etc.).

Requests for information about specific research areas available may be obtained through the Directors of Graduate Studies in Civil, Electrical, and Mechanical Engineering.

Center for Commonwealth Studies

The Center for Commonwealth Studies was established at Duke University in 1955 and has received financial support from the Carnegie Corporation of New York, the Rockefeller Foundation, and the Ford Foundation. Its objectives are:

1. to encourage and stimulate by financial assistance and other means the research interests of individual scholars in Commonwealth affairs, European institutions and their expansion, and development studies,
2. to establish at Duke University a Center whose facilities will promote interest in research relating to the Commonwealth, provide the materials for basic research, and encourage research by Commonwealth and American students and faculty.

The Center awards fellowships to graduate students from Australia, Canada, and New Zealand who propose to study for the Ph.D. degree in economics, history, or political science at Duke University. National selection committees in each of the mentioned countries facilitate the selection of fellows.

Each spring the Center sponsors a joint seminar for graduate students in economics, history, and political science. In addition the Center sponsors occasional lectures at the University by distinguished Commonwealth scholars.

Financial assistance is provided to students and faculty at the University for field research in Commonwealth countries. Studies resulting from research sponsored by the Center are frequently published by the Duke University Press in the Commonwealth-Studies Series. The Center also distributes in its reprint series selected published articles that relate to the Commonwealth. Inquiries should be addressed to the Executive Secretary, Center for Commonwealth Studies, Duke University, Durham, North Carolina.

Cooperative Programs with the Consolidated University of North Carolina

Interchange of Registration. (See Registration, the Reciprocal Agreements with the Consolidated University of North Carolina and with North Carolina College.)

Library Exchange

Students of both the University of North Carolina and Duke University are granted certain library privileges in the respective libraries of each University. Books unavailable in one library may be procured on short notice through an interlibrary loan service.

The Cooperative Program in the Humanities

The Cooperative Program in the Humanities, jointly managed by Duke University and the University of North Carolina at Chapel Hill, aims at expanding and improving activities in the humanities in the two universities and throughout the region. The Program was established in 1963, with offices on both campuses, and receives substantial financial support from the Ford Foundation.

The central feature of the Program is a cooperative exchange between the two universities, on the one hand, and a number of liberal arts colleges on the other. Academic-year research leaves are made possible for faculty members from humanistic departments of liberal arts colleges located in Virginia, North Carolina, and South Carolina. These scholars are known

as Humanities Fellows. Each Fellow has a significant, clearly defined research project. As partial replacements for the Humanities Fellows during their year of leave, the Program, whenever possible, offers the colleges advanced graduate students from the two universities. This arrangement permits a certain number of Duke and University of North Carolina students to have both a full year of teaching at a college or university in the area, and a duty-free year afterwards, with a stipend of $3,000 to enable him to complete his degree.

Offered each summer under the auspices of the program is the Southeastern Institute of Medieval and Renaissance Studies, which was established for the advancement of scholarship and the improvement of teaching in the southeastern region. The fifth Institute will consist of six informal seminars, each led by a Senior Fellow. Each seminar will have an enrollment of about six faculty members from colleges in the southeastern region. Post-doctoral students of all areas of medieval and renaissance studies are invited to participate.

Inquiries may be directed to the Program Office, 2101 Campus Drive, Duke University.

Cooperative Program in Russian and East European History

The graduate schools of Duke University and the University of North Carolina offer a cooperative program leading to the M.A. and Ph.D. degrees in Russian and East European studies. Students admitted to one institution are encouraged to enroll in those courses in the other that are advantageous to their programs, and to utilize the libraries and facilities of both universities. The holdings of the two libraries in Russian and East European materials are substantial and complementary. Both libraries have a policy of purchasing all significant published works in Slavic history, economics, government, geography, literature, and linguistics. Graduate assistantships and fellowships of various types complete the program.

Cooperative Program in Teacher Education (Secondary) (M.A.T. degree)

Selected graduates of liberal arts colleges who have not completed a teacher preparation program will be admitted to the Cooperative Program in Teacher Education to complete simultaneously in their graduate programs requirements for a teacher's certificate and additional training in the field to be taught. Full-year internships with salary are arranged with cooperating public and private school systems. Students admitted to this program are required to attend the first Summer Session before their internship. This program is limited to students preparing to teach in

junior or senior high schools. For materials describing this program, write to the Graduate School or to Director, Cooperative Program in Teacher Education, Department of Education.

Prospective Teacher Program (Secondary) (M.A.T. degree)

Two-year fellowships are available for a limited number of selected college graduates who wish to prepare for junior or senior high school teaching. This program provides depth in both professional and non-professional fields and provides a gradual induction into teaching with some experience in working with disadvantaged children. Inquiries should be addressed to Director, Prospective Teacher Program, Department of Education.

Resources for Graduate Study

The Libraries

The new section of the William R. Perkins Library has shelf space for 1,500,000 books, seats for 1,250 readers, and a staff of 200. When renovation of the old building is completed in the spring of 1969, the entire complex will provide room for 2,500,000 books and 2,100 readers. The reader stations include about 700 carrels, 200 closed and 500 open, of which 475 are in the new building.

Four of the six floors of the building are above ground. On the main floor—at ground level—are the reference and loan departments, bibliography, current periodicals, interlibrary loan, and all units of technical processing. Documents, newspapers, microtext collection, and the microphotography laboratory and other copying facilities are located on the floor below. The administrative offices and graduate reading room are on the second floor, and manuscripts and archives on the third. Twelve small reading and study rooms are provided in the stacks for the departments in the humanities and social sciences that grant the doctorate. Four seminar rooms are also provided in the stacks. The building is heated electrically and is air conditioned.

Microphotography and Photographic Services utilize modern equipment for reproducing printed and manuscript materials and for reading of materials in the microtext collection. A special room has been set aside for film readers.

The combined University Libraries contained 1,940,000 volumes in the summer of 1968. In addition to the collection in the Perkins Library, there are eight School and departmental libraries with holdings as follows: Divinity, 137,000 volumes; Engineering, 41,000 volumes; Law, 156,000 volumes; Medical Center, 87,000 volumes; Woman's College, 170,000 volumes; Biology-Forestry, 95,000 volumes; Chemistry, 24,500 volumes; Mathematics-Physics, 33,500 volumes. Eighty thousand volumes were added in 1967-68. Approximately 10,000 periodicals and 165 newspapers are received currently.

The extensive resources of the Library for research students may be suggested by the following special collections:

The Trent Collection of Walt Whitman, containing the first and all other important early editions or issues of *Leaves of Grass;* books and articles of Whitman biography and criticism; nearly 300 manuscripts and 400 letters; and pictures, sheet music, and other miscellanea.

The George Washington Flowers Collection of books, manuscripts, pamphlets, and newspapers on all phases of Southern history.

The Arents Collection of several hundred volumes relating to the culture and production of tobacco and the manufacture and distribution of tobacco products.

The James A. Thomas Collection of books on Chinese history and culture.

The Guido Mazzoni Library, a collection of approximately 23,000 volumes and 67,000 pamphlets covering the whole range of Italian literature, with special strength in the nineteenth century.

The Gustave Lanson Library of 12,000 books and monographs on French literature.

Latin-American Collections, built around a special Peruvian library of 7,000 books and manuscripts, a Brazilian library of several thousand volumes, and an Ecuadorian library of 2,000 volumes, supplemented by strong collections of the public documents of these and other Latin-American countries.

The Robertson Library of Philippiniana.

The Frank C. Brown Folklore Collection, consisting of about 38,000 manuscript pieces, 1,400 vocal recordings, and 650 musical scores of North Carolina folklore.

The Strisower Library of International Law, numbering about 5,000 volumes, with many rare books and periodical files.

The Trent Collection in the History of Medicine (Medical Center Library), containing about 3,000 books and 2,500 manuscripts with special strength in anesthesia, anatomy, English medicine, vaccination, yellow fever, pharmacy, and medical biography.

The Holl Church History Library, dealing primarily with the period of the Reformation.

The Frank Baker Collection of Wesleyana and British Methodism,

consisting of 1,500 editions of the works of John and Charles Wesley, 8,000 volumes concerning all phases of the development of British Methodism, 4,000 volumes relating to the religious and social background of British Methodism, and 4,000 manuscript pieces by the Wesleys and their coadjutors and by British Methodists of the last 200 years.

Collections in English and American Literature, where emphasis has been placed principally on the eighteenth and nineteenth centuries, with the collections of Swinburne, Tennyson, Rossetti, and Bryant, significant groups of annotated copies and first editions of Coleridge and Byron, the Carroll Wilson collection of Emerson, some 5,000 items of eighteenth-century English poetry and prose, and the Paul Hamilton Hayne library of American literature.

In addition to these and other special collections, the Libraries contain excellent files of United States federal and state documents, public documents of many European and Latin-American countries, and publications of European academies and learned societies. The newspaper collection, with 13,300 volumes and 15,000 reels of microfilms, has several long eighteenth-century files, strong holdings of nineteenth-century New England papers, and of ante-Bellum and Civil War papers from North Carolina, South Carolina, and Virginia; there are also many European and Latin-American papers. The manuscript collection of 3,900,000 items is particularly strong in all phases of the history, politics, and social and economic life of the South Atlantic region, though it includes also significant papers in English and American literature, and several notable medieval manuscripts in both Greek and Latin.

Science Laboratories

Botanical and Zoological Laboratories

Facilities for graduate study in the departments of Botany and Zoology are located on the West Campus. A Biological Sciences building, completed in 1962, contains well-equipped modern laboratories for teaching and research in the various fields of botany, forestry, and zoology. Special facilities are available, such as animal rooms, greenhouses, darkrooms, refrigerated and controlled environment laboratories, electron microscopes, Van de Graaff accelerator, X-ray machines, radiation and radioisotope equipment, and other modern research facilities. Extensive facilities for experimentation in the environmental control of plant growth are available in the new phytotron adjacent to the Botany greenhouses.

The Botany herbarium, containing over 310,000 specimens, is worldwide in scope and includes notable collections of mosses and lichens. The Biology-Forestry Library contains an outstanding collection of books

and periodicals. The Library currently subscribes to over 800 journals and has 91,000 volumes.

Unique assets for teaching and research are the Sarah P. Duke Gardens, conveniently located on the West Campus; the four-acre experimental plot and field laboratory developed by the Department of Botany; the Duke Forest, comprising 8,500 acres of woodland adjacent to the West Campus; the Field Station for the Study of Animal Behavior; and the Duke University Marine Laboratory at Beaufort, North Carolina. Duke University, through the Botany and Zoology departments, is a member institution of the Organization for Tropical Studies in Costa Rica, a facility providing excellent opportunities for course work and research in the tropical flora and fauna.

Scholarships for advanced study during the summer months are maintained at the Highlands Biological Laboratory, Highlands, N.C.; at the Marine Biological Laboratory, Woods Hole, Massachusetts; and at the Duke University Marine Laboratory. Requests for information concerning scholarships at the Highlands Laboratory should be addressed to the Botany Department, those at Woods Hole to the Zoology Department, and those at Beaufort to the Duke University Marine Laboratory.

Marine Laboratory

The Duke University Marine Laboratory is located at Beaufort, North Carolina, one and one-half miles from the open ocean. The physical plant includes five well-equipped research buildings, three classrooms, and three dormitories. The Laboratory provides excellent facilities for graduate courses in botany, chemistry, geology, and zoology and for thesis research throughout the year. Special research and training facilities for field work in marine biology and biological oceanography include two motor vessels and a 118-foot biological research vessel *Eastward*, with specialized apparatus for collecting and environmental measurements.

Six National Science Foundation Predoctoral Traineeships in biological oceanography and two Bureau of Commercial Fisheries Educational Grants in marine biology are available to advanced graduate students during the academic year. In the summer of 1969 twenty-five National Science Foundation Predoctoral Awards will be offered for course or research work in marine biology at the Marine Laboratory. For information concerning awards, courses, and research space, write to the Director, Dr. John D. Costlow, Duke University Marine Laboratory, Beaufort, North Carolina, 28516.

Animal Behavior Station

Located less than one mile from the campus, the 80 wooded acres of the Station provide facilities for studies of penned and free-ranging, and caged animals. These facilities include sound-proof observation chambers, barns, aviaries, and pens for large mammals and birds, and two

water-fowl ponds. A new and extensive facility for the study of prosimian primates (both simulated "natural habitats" and cages) has just been completed. For information regarding research space or research assistantships in Animal Behavior, write to Dr. P. H. Klopfer, Department of Zoology.

Physics Laboratories

The Physics Building, comprising about 130,000 square feet of floor space, is devoted to the research and instruction of the Departments of Physics and Mathematics. An additional 27,000 square feet of space are provided in the new Nuclear Physics Building completed in 1968 and located adjacent to the Physics Building. Graduate students are provided with office space in one of the two buildings.

In addition to the lecture halls and the elementary laboratories, there are instructional laboratories for work in electronics and advanced physics.

About half the building is devoted to special laboratories for research in microwave spectroscopy, atomic, nuclear, high energy, low temperature and solid state physics. Special equipment includes microwave spectrographs operating up to 500,000 megacycles; one 4 MEV and one high resolution 3 MEV Van de Graaff accelerator, a 30 MEV cyclotron/tandem Van de Graaff accelerator; a helium liquefier, cryostats, magnets and associated equipment for research down to the millidegree Kelvin temperature range; a DDP-24 computer used with two projection microscopes in the High Energy Physics Laboratory and a DDP-224 computer used in the Nuclear Structure Laboratory.

Duke University and the Raleigh and Chapel Hill branches of the University of North Carolina have organized a joint computing center which is equipped with a powerful computing system consisting of an IBM System/360 Model 75 at the Research Triangle center with a 360/Model 30 on each of the three campuses.

The Physics-Mathematics Library contains an unusually complete selection of books and periodicals. A large, well-equipped instrument shop staffed by nine instrument makers, four electronic technicians, and a glass blower is in the building.

Chemistry Laboratories

A new Chemistry Building is scheduled for occupancy early in 1969. The building contains three and one-half floors which provide 146,440 square feet of total area. The usable space is over twice that of the original building. The entire building is air-conditioned and electrically heated.

The Chemistry Department is well equipped for performing research in many areas of current interest. Among instruments available for

general use in various research problems are a Varian A-60 nuclear magnetic resonance spectrometer, a Bendix time-of-flight mass spectrometer Model 12, many recording spectrophotometers for infrared and ultraviolet-visible studies, and numerous gas chromatographs, analytical as well as preparative. Some other instruments of primary importance to specific research projects include Varian V-4502-12 and V-4502-15 electron paramagnetic resonance spectrometers, a Varian HR-60 nuclear magnetic resonance spectrometer, a Carey Model 14R ultraviolet-visible spectrophotometer, a Durrum-Jasco ORD/UV/CD-5 recording spectropolarimeter and circular dichroism recorder, polarographs, a flourescence spectrophotometer, a flame photometer, and optical equipment for photochemical and kinetic studies. Equipment for X-ray crystallographic investigations is extensive and includes a Rigaku-Denki low-angle X-ray diffractometer, a Kratky U-Bar camera, a General Electric XRD-5 diffractometer, a Picker automated full-circle X-ray diffractometer, and single crystal precession and Debye-Scherrer powder cameras. The Chemistry Department also has direct access to two other major instruments located in the Research Triangle Park. These are the A.E.I., Ltd., MS-902 high resolution double focusing mass spectrometer and the IBM 360-75 computer, the latter linked by cable to the Duke University Computing Laboratory.

The Department has a machine shop, an electronics shop, and a glass-blowing shop. The facilities of the Duke University Marine Laboratory on the coast at Beaufort, North Carolina, are available for specimen collection and processing in studies of organic chemicals of marine origin. The departmental library is located in the Chemistry Building. It has holdings of over 20,000 volumes and receives 220 current scientific periodicals.

Psychology Laboratories

The Psychology Department occupies new and fully renovated quarters, comprising about 53,000 square feet of floor space, which house its main laboratories, seminar rooms, classrooms, and special facilities. The building is completely air-conditioned for year-round research and study. For the use of graduate students and staff, the Department houses a periodical reference room with an extensive collection of current and bound journals and monographs in psychology and related subjects. In addition to general purpose laboratories, there are special facilities for studies of animal behavior; sound-proofed and electrically shielded rooms for use with human and animal subjects; specially equipped rooms for the study of visual perception; electrophysiological recording rooms; a histological laboratory and surgery; photographic dark rooms, etc. The social psychology unit (joint with the Department of Sociology) contains observation, communication, and recording facilities for the study of social interaction. There is an extensive suite of interview and observation rooms

for the study of human personality and clinical processes. Automatic computation equipment is available for all research purposes. A departmental shop, with competent technicians in charge, is maintained to provide specialized mechanical and electronic apparatus. Other facilities for research and teaching are available in the laboratories and clinics of the adjacent Duke Medical Center.

A number of clinical installations for adults and children, devoted to an extensive range of clinical and guidance problems, cooperate with the department in providing facilities for research and training. In addition, the Department operates a Preschool Laboratory for four- and five-year old children. The Department cooperates with the Department of Zoology in the operation of an 80-acre field station in the near-by Duke Forest for the study of animal behavior in natural settings. (See p. 31, Animal Behavior Section.)

Computation Center

The Duke University Computation Center is intended to provide the University faculty and students with a facility for research and instructional computing needs.

The Center is presently equipped with an IBM System 360 Model 30 (24K bytes, two tapes, card reader, printer, Calcomp plotter) which is connected by high-speed telephone lines to an IBM System 360 Model 75 (512K bytes, 2,000K bytes LCS, two 2314 disk facilities, data cell, seven tapes, card reader, printer) located at the Triangle Universities Computation Center which is in the Research Triangle Park. In addition, there exists a medium speed terminal (IBM 2780 card-reader and printer), two IBM 1050 slow speed terminals, and one IBM 2741 Keyboard terminal connected to the Triangle Universities Computation Center. These are located in the School of Engineering, Economics Department, Division of Biomathematics, and the Computation Center.

The Triangle Universities Computation Center (TUCC) is a nonprofit corporation formed jointly by Duke University, North Carolina State University at Raleigh, and the University of North Carolina at Chapel Hill. The purpose of the TUCC is to make available to the three universities the finest computing capabilities in the country.

The Duke Computation Center located on the campus has a staff consisting of systems programmers, programmers, keypunch operators, computer operators, a secretary, a librarian, a technical writer, and a dispatch clerk. The primary responsibility of the staff of the Computation Center is to provide service to the University's users.

Faculty members at Duke may use the facilities of the Computation Center by filling out an application for computer services. All users of the Computation Center facilities are urged to obtain funds to pay for computer services. However, any user unable to obtain grant funding may ask

for financial support from the University at the same time he applies for the services.

Applications for University support of computer time for research are reviewed by a utilization committee, and applications for University support of computer time for instruction are reviewed by the Office of the Dean of Arts and Sciences. Approved applications of both types are forwarded to the Computation Center where a credit is established for the applicant on the Computation Center ledger.

More specific information regarding the availability and use of the facilities of the center may be obtained from the Director of the Computation Center, the Coordinator of Institutional Data Processing, or the Manager of the Computation Center.

Engineering Research Laboratories

The laboratories of the three departments which comprise the School of Engineering contain a wide range of basic equipment that finds general application in the several fields of specialization. In addition, each laboratory contains selected items of highly sophisticated equipment used to support advanced research in areas of particular emphasis. The exceptionally fine facilities available for instruction and research are suggested by the following brief listing of selected items to be found in the three departments.

Civil Engineering: closed-loop, electrohydraulic dynamic loading system capable of applying pulses of any shape, of magnitudes up to 5,000 pounds, and controlled in either force or displacement modes in frequencies from zero to 100 cycles per second; vacuum-forming facilities for structural shell models; high-speed digital strain-measuring and recording systems; ultra-high-pressure triaxial shear apparatus for confining pressures up to 100,000 p.s.i.; high-speed camera for studying explosions and similar phenomena; large-aperture research polariscope; reflective photoelastic polariscope; sustained-loading facility for long-duration studies of prestressed concrete.

Electrical Engineering: high-resolution (7Å) electron microscope with heating and tilting stage; stereo optical microscopes; ion-pumped bakeable ultra-high-vacuum unit; helium dewars and cryostats; 9.5-inch magnet and regulated power supply with complete nuclear magnetic resonance system; spin-echo spectrometer; x-ray diffraction diffractometer with monochromator attachment furnaces; environmental test chambers; analog computer facility; multichannel tape and strip-chart recorders; complete x-band microwave instrumentation system; sampling oscilloscope; cryomagnetic facility for susceptibility measurements; Digital Equipment Corporation Linc 8 computer.

Mechanical Engineering: digital data acquisition system, with high speed scanner and punched tape output; FM-AM instrumentation tape

recorder; spectrum analyzers; storage and dual-beam oscilloscopes; oscillograph; X-Y and strip chart recorders; temperature, pressure, strain, force, and acceleration transducers; electrodynamic shaker table; sound room with associated sound measuring and analyzing equipment; experimental vacuum transport system (1800 ft. x 1 ft. diameter); fuel research engine; materials laboratory with injection molding, stereo and high temperature microscopes, heat treating furnace, etc.

Available to graduate students in all three departments of the School of Engineering are also the Central Service Shop facilities of the School, as well as those located elsewhere on the campus.

A major resource of Duke University is the Library, the School of Engineering division of which contains over 38,000 volumes and receives more than 450 periodicals. Students have full access to other specialized collections elsewhere on the campus.

The School of Engineering houses an IBM Model 2780 medium-speed card-reader punch and printer which communicates directly with the IBM System 360/Model 75 computation facility that is located in the Triangle Universities Computation Center in the adjacent Research Triangle Park.

Forest Sciences Laboratory

The establishment of the U.S. Forestry Sciences Laboratory research facility of the Southeastern Forest Experiment Station in the Research Triangle Park near Durham provides an unusual opportunity for complementing the research programs of students in the Department of Forestry. Specialized research projects in forest entomology, pathology, physiology and soils are currently under way at the Laboratory. The staff of the Laboratory is available for consultation and seminar participation, and may offer advice to students conducting research in the Department of Forestry. Arrangements may also be made for students to conduct certain aspects of their research at the Laboratory.

Duke Forest

The Duke Forest consists of approximately 8,500 acres of land, most of which is adjacent and easily accessible to the University campus. Situated in the lower Piedmont region and composed of second-growth shortleaf pine, loblolly pine, and hardwoods, the Forest is representative of the various types of timber growth and soils found throughout the region. Through placing the Forest under intensive management for forestry purposes, substantial progress has been made in developing the educational work and research in forestry.

The proximity of the Forest to the laboratories, greenhouses, phytotron, and library facilities of the University provides an excellent opportunity

for advanced study and research in forestry. Research, particularly in the fields of forest ecology, forest meteorology, forest soils, forest management, properties of wood, forest-tree physiology, forest entomology, and forest pathology, is well under way. Several members of the botany and zoology staffs are also engaged in research in the Duke Forest.

Student Life

Living Accommodations*

Duke University strives to provide comfortable, attractive living accommodations for graduate-level resident students, both married and unmarried.

The Graduate Center houses men and women enrolled on a full-time basis in the Graduate School and the professional schools. Graduate women are also assigned to Hanes Annex, a residence hall, and to Town House Apartments located between the West and Woman's College campuses.

The Graduate Center houses 197 male graduate students, 56 women graduate students, and 117 women undergraduates. Commons facilities on the main floor are shared by men and women.

Hanes Annex has 39 beds for graduate and allied medical students. The second floor of this building is used by seniors in the School of Nursing. Commons areas are jointly used by the two groups.

Rooms in residence halls are normally rented for the academic year, but for no period less than one semester or specified term.

Town House Apartments include thirty two-bedroom units, each furnished for three graduate women students. Two students occupy the master bedroom and the third occupies a smaller bedroom. A living

*Information described herein pertaining to graduate housing facilities is subject to change prior to September 1969.

room, kitchen and one and a half baths complete these attractive living units. No effort is made by the Office of Housing Management to assign bedroom space within each apartment.

Duke University has 98 one-bedroom apartments under lease for a period of three years. An additional 104 two- and three-bedroom apartments will be under lease for one year to meet student requirements until a new married student housing complex is ready for occupancy about mid-summer 1970. All units are within walking distance of the campus.

Detailed information about university housing facilities for single and married students, including rental rates, will be provided on request by the Director of Housing Management, Duke University, Duke Station, Durham, 27706.

Rooms in residence halls and spaces in Town House Apartments or other rental units may be reserved by applicants only if they have been accepted by the Graduate School, and after the required $25 room or security deposit has been made with the Duke University Bursar. The initial room or security deposit is required with the application and is held until the room or apartment is vacated. Application forms and detailed information on graduate housing will be mailed when the Graduate School has notified the Office of Housing Management of official acceptance of the student. Single women may express a choice for the type of housing desired. Completed applications for rooms and apartments are to be returned, with required deposits, to the Office of Housing Management, Duke Station, Duke University, Durham, N.C. Assignment priority is established by the date of receipt of completed applications with deposits in the office of the Director of Housing.

Regulations governing occupancy of rooms and apartments will be provided by the Office of Housing Management at the time application forms are forwarded to accepted students. Occupants within each type of housing are expected to comply with the appropriate regulations.

For the cost of housing and for details on rental refund policy, see the section on Housing in the Financial Information chapter.

Food Services

Food service on both the Woman's College Campus and the West Campus is cafeteria style. The dining facilities on the West Campus include one straight-line cafeteria with multiple-choice menus, a free-flow service area which includes cafeteria counters as well as a grill, and a table service dining room called The Oak Room where full meals and a la carte items are served by waitresses. The Graduate Center has a cafeteria open at meal hours, and a coffee lounge which is open until 11:00 p.m. Because of the large number of those served in the dining halls, it is not possible to arrange special diets for individual students.

For cost of food services, see the chapter on Financial Information.

Services Available

Medical Care

The complete medical facilities of the Duke University Medical Center are available to all members of the University community. To secure the benefits of the Student Health program, a graduate student during the term or semester in which the illness occurs must (1) in the Summer Session term be registered for at least 1 unit of research or 3 units of course work, (2) prior to completing minimum residence requirements be registered for at least 9 units per semester and thereafter according to the schedule. (See Residence). Students are not covered during vacations and their dependents and members of their family are not covered at any time. Care is provided for men at the Student Health Office in Duke Hospital and for women at the Woman's College Infirmary and in the Student Health Office.

The service provided includes hospitalization in Duke Hospital, when recommended by the Hospital staff, to a limit of thirty days in the fall and spring semesters—six days in the Summer Session; medical and surgical care under the supervision of a senior physician or surgeon; drugs, X-ray work, and ward nursing. Students pay for board while in the hospital. Excluded from the service are refraction of eyes, treatment of teeth, and of all chronic and pre-existing conditions, and elective surgery.

Off-campus injuries and accidents are not covered by Student Health. Graduate students are urged to carry adequate health insurance to supplement Student Health Program services. If students have insurance providing hospitalization, surgical, or medical benefits, the benefit shall be applied to the cost of their medical care.

Students whose course-load entitles them to full coverage under the Student Health program are eligible for a complementary insurance policy which then comprises protection for the entire calendar year. Concerning this complementary policy inquire of the Dean of the Graduate School. *Foreign students are required to hold this or another acceptable policy.*

Student Activities

Graduate students new to Duke University may be reminded that they are welcomed to use such recreation facilities as swimming pools, tennis courts, golf course, and to affiliate with choral, drama, and religious groups. They may become junior members of the American Association of University Professors and may affiliate with Phi Beta Kappa and social fraternities. Wives of graduate students may join the very active Graduate Wives Club.

A full program of co-curricular and recreational activities is presented by the University Religious Council, Y.M.C.A., Y.W.C.A., Student Union,

Student Government Organizations, and Clubs. Most programs are open to the entire university community. Inquiries should be directed to the Student Activities Office—202 Flowers Building.

The Information Center, Page Box Office, Coffee House, Publications, Art Gallery, Meeting Rooms, Lounges, Music Listening Rooms, and recreational facilities are located in the Flowers and Union Buildings.

The Duke University Counseling Center

Through the Counseling Center, the University provides a professional counseling service designed to aid students in gaining a better understanding of themselves and the opportunities available to them. Counseling is available in the areas of career planning, educational opportunities, and personal and social adjustment.

The Center maintains files of educational and vocational information related to career planning, graduate educational programs and fellowships, and study aids.

National and University-wide testing programs are administered by the Center. A continuing program of research in the areas of counseling and testing is also carried on by the staff of the Center.

Appointments Office

Duke University maintains an Appointmnts (placement) Office which acts as a liaison between the University and potential employers in business, education, and government. All services are offered without charge to Duke students and alumni. The staff is available to talk with graduate students about their future professional plans. Graduate students who wish to register with the office are offered an opportunity to assemble a complete dossier of academic records and recommendations to supplement applications for positions and to have a permanent file for future reference. Pertinent recommendations are far easier to accumulate during the time a student is enrolled at Duke. Interviews with representatives visiting Duke are scheduled throughout the year through the Appointments Office for those students who have registered. Copies of academic records are released only with the permission of the individual.

Research and Publications

The several departments of the University are devoted to research as well as to instruction. Since the University exists for the promotion and diffusion of knowledge, attention is rightly placed, in the Graduate School, on research activities.

In furtherance of the University's obligation to promote and diffuse knowledge, the President annually appoints a University Council on

Research, which receives applications from members of the various faculties for subsidies in support of research. Vigorous and forward-looking policies of this Research Council have initiated and encouraged the completion of many substantial and important research projects.

The Duke University Press takes its place as a significant agency in the diffusion of knowledge. Created in 1925 as a successor to the Trinity College Press, the Duke University Press continued the publication of the *South Atlantic Quarterly,* published at Trinity College since 1902, and in 1926 revived the *Hispanic-American Historical Review,* which had been founded and published from 1918 to 1922 by a group of scholars interested in Hispanic America. In 1929 *American Literature* was begun with the cooperation of the American Literature Group of the Modern Language Association. This journal was followed in 1931 by *Ecological Monographs,* and in 1932, *Character and Personality* (since 1945 the *Journal of Personality*). In 1935 the Press began the publication of the *Duke Mathematical Journal.* Since 1948 it has published *Ecology,* the official journal of the Ecological Society of America. The Law School of Duke University publishes *Law and Contemporary Problems, The Duke Bar Journal,* and *The Journal of Legal Education.*

The Press, since its organization, has published more than four hundred volumes. Included among these are six series: American Sociological Forum, Duke Historical Publications, Duke Studies in Religion, Lilly Endowment Research Program in Christianity and Politics, the Program in Comparative Studies on Southern Asia, and, largest of all with thirty-two volumes, the Duke University Center for Commonwealth Studies Publications. In the broadest sense, the policy of the Press is to make available to the public any scholarly work that merits publication, though special attention is given to works in fields of knowledge cultivated by the University.

Visiting Scholars

The libraries and, to the extent practicable, other facilities of Duke University will be made available to faculty members of colleges and universities who wish to spend a period of time on the campus in pursuit of their scholarly interests. No fees will be charged such visitors unless they wish to participate in activities for which a special fee is assessed. Room and board may be arranged for at the regular rates in the dormitories and dining rooms. Dormitory space is usually available during the summer months. Inquiries concerning residence for visiting scholars should be directed to the Dean of the Graduate School.

Admission

Students Requiring Admission

Admission is required of (1) all students who intend to pursue study toward a degree offered by the Graduate School, (2) all other students who desire credit for whatever purpose for graduate courses—except students who register as Special Students in the Summer Session. Students who have discontinued a program of study after earning a master's degree here must by letter request permission of the Dean to undertake a doctoral program.

Prerequisites

A student seeking admission to the Graduate School of Duke University must have received an A.B. or B.S. degree (or the equivalent in the case of foreign students) from an accredited institution. His undergraduate program should be well rounded and of such quality as to give positive evidence of capacity for graduate study. Normally he should have majored in the area of his intended graduate study. Many departments (see Courses of Instruction) list specific prerequisites. Students are urged to anticipate at least one of the language requirements and are reminded that Educational Testing Service Graduate School Foreign Language tests in French, German, Russian, and Spanish are offered to undergraduate and graduate students at many centers on nationally uniform dates (see Language Requirements).

Procedures

A student seeking admission to the Graduate School should request the Dean of the Graduate School to send an application blank. This he should fill out completely and return promptly. In addition he should provide the following supporting documents: (1) two copies of a transcript or transcripts of all his undergraduate and graduate work mailed directly by the registrar to the Dean; (2) as soon as possible, two supplementary transcripts showing completion of work in progress when the earlier transcript was made; (3) three letters of recommendation, written on the forms provided, by persons best qualified to judge him as a prospective graduate student and mailed directly to the Dean; and (4) scores on the Graduate Record Examination or Miller Analogies Test, as indicated below.

All applicants except foreign students applying from outside the United States, non-degree students, and former students in the Graduate School must include the application fee of $5.00 in check or money order payable to Duke University.

Graduate Record Examination and Miller Analogies Test

Scores on the Graduate Record Examination, particularly the Aptitude Test, and on the Miller Analogies Test are strongly recommended in all departments and must be submitted if either test has been taken. Scores on the Graduate Record Examination may be requested of any applicant whose record is marginal and must be submitted by all applicants for a fellowship. Information on times and places of Graduate Record Examinations can be provided at the applicant's college or by the Educational Testing Service, 20 Nassau Street, Princeton, New Jersey. Departments that require scores of all applicants are listed below.

Departments	*Graduate Record Examination*		*Miller Analogies*
	Aptitude	*Advanced*	
Anatomy	×	×	
Biochemistry	×	×	
Botany	×	×	
Business Administration[1]			
Chemistry	×	×	
Economics	×	×	
English	×	×	
Forestry	×		
Geology	×		
German	×		
History	×		
Mathematics	×		
Microbiology	×	×	
Music	×		

[1] Applicants to the Graduate School of Business Administration are required to take the Admission Test for Graduate Study in Business, administered by the Educational Testing Service.

Pathology	×[2]		
Philosophy	×		×[3]
Physics	×	×	
Physiology	×		
Political Science	×		
Psychology	×	×	
Religion	×		
Romance Languages	×	×	
Sociology	×	×	
Zoology	×	×	

[2] If the candidate does not already hold an M.D. or D.V.M. degree he will be required to take the GRE Aptitude Test.

[3] Either GRE or MAT.

Additional Procedure for Foreign Students

Fully qualified students from outside the United States are welcomed in the Graduate School to take courses and in many instances to study toward a degree. In applying for admission the foreign student should, in addition to the information required of all students, submit with his application (1) if his native language is not English, certification of ability to use English through scores on tests provided by the Educational Testing Service (TOEFL), the University of Michigan Language Institute, or the American University Language Center, (2) a statement certified by a responsible person that his finances are sufficient to maintain him during his stay at Duke University, and (3) a statement by a qualified medical doctor describing any emotional or physical illness the applicant has had during the previous [illegible] years.

All foreign students whose native language is not English will be examined during their first registration period for competence in the use of oral and written English. Until competence is determined, admission and arrangements for an award involving teaching must remain provisional. Students found to lack the necessary competence will be required to enroll in the non-credit course called English for Foreign Students and to reduce their course or research program three units. Passing this examination or the course, if it is required, will not meet degree requirements for a foreign language. (See Language Requirements for Foreign Students.)

Notification of Status

When admission is approved, the student will receive a letter of admission and an acceptance form. *The process of admission is not complete until the statement of acceptance has been returned.*

Applicants who are admitted will be offered full admission, provisional admission, or non-degree admission. *Provisional admission* is offered to students who (1) appear to warrant admission but do not fully comply with admission requirements, for a trial period of one semester or a minimum of 12 hours of course work, or (2) are admissible except that the application lacks a letter of recommendation, a supplementary tran-

script, required test scores, or some other required information. *Non-degree admission* is offered to students who (1) have no intention of taking an advanced degree at Duke University but wish to take courses for accreditation, for transfer to other institutions, or for other purposes, or (2) do not fully meet admission requirements but wish to further their academic interests. Graduate credit earned under *provisional status* may be applied toward an advanced degree at Duke University if and when the student is granted full admission; graduate credit earned under *non-degree* status may not be applied toward an advanced degree at Duke University.

Deadlines for Applications

It is the applicant's responsibility to make certain that his application is completed and in order before the dates specified. Because applications cannot be reviewed until all supporting documents are filed, applications should be submitted at least *two weeks* before the closing dates listed below:

Fall semester, admission and award	February 15
Fall semester, admission only	August 1
Spring semester, admission only	January 1
Summer Session,* Second Term	May 13
Summer Session,* Second Term	June 21

* Students seeking admission to the Graduate School for study in the Summer Session should make application to the Dean of the Graduate School as well as to the Director of the Summer Session.

Financial Information

Tuition and Fees

The Graduate School awards such financial aid as fellowships, scholarships, and assistantships. The several departments engage part-time instructors who may be graduate students. The Treasurer of the University, however, has sole responsibility for paying stipends to students, collecting from them such fees as are due, and making special arrangements for prorating fees.

Estimated Expenses in the Academic Year

The following table represents an estimate of a graduate student's basic expenses for one academic year for a full program of work. These figures do not include allowances for recreation, travel, clothing, and other miscellaneous items which vary according to the needs and tastes of the individual.

	Low	*Moderate*	*Liberal*
Tuition and fees	$1710.00	$1710.00	$1710.00
Room Rent*	325.00	325.00	420.00
Board	550.00	600.00	650.00
Laundry	40.00	45.00	50.00
Books	70.00	90.00	110.00

*In the Graduate Center.

Tuition and Fees in the Academic Year

The following table shows the tuition and fees collected from all students. All charges for each semester are due and payable, unless otherwise specified, at the time of registration for that semester and are subject to change without notice. No student is admitted to classes until arrangements have been made with the Bursar of the University for the settlement of his tuition and fees.

Tuition ($57.00 per unit)	$855.00
Athletic fee, optional, per year, not including federal tax, payable in the fall semester	25.00
Binding fee, three copies of thesis or dissertation, other copies optional, $5.00 a copy	15.00
ETS Foreign Language Test, each administration, payable to the University Counseling Center	8.00
In absentia fee, due on date of registration, one unit per semester	57.00
Late registration fee	10.00
Microfilming fee, doctoral degree only, upon final submission of dissertation	25.00

Tuition for a full semester program of 15 units amounts to $855.00. Part-time tuition is computed at the rate of $57.00 per unit. After the day of registration, no refund of tuition will be made except for involuntary withdrawal to enter the armed services or as indicated on p. 58 (Change of Registration).

Special Tuition Rates for Teachers and Others

The Graduate School recognizes a special obligation to encourage the following types of students in their professional and personal advancement: (1) members of the faculties of the neighboring public schools and colleges, currently engaged in *full-time* teaching while taking courses in the Graduate School, (2) ministers of neighboring churches, (3) wives of Duke faculty members, (4) *full-time* employees of Duke University who are paid on a monthly basis *throughout* the year and have been employed for two years. The reduced tuition rates specified below do not apply to teachers and ministers while on leave of absence, nor to holders of fellowships, scholarships, or graduate and research assistantships, nor to part-time instructors.

Persons eligible for the reduced tuition rate must meet the admission standards required of all graduate students and must be admitted to the Graduate School. They may enroll for one or two courses per semester (in no case totaling more than 7 units) upon payment of a fee of $5.00

for registration for each semester and tuition of $30.00 per unit of credit or an audit fee of $30.00 per course. Residence requirements cannot be fulfilled at the reduced rate.

Audit Fee

In a semester in which a student registers and pays fees for 9 units or more, he may audit one course without charge. Should he be permitted to audit a second course or should he be registered for less than 9 units, the audit fee is $30.00 per course.

Transcript

A student who wishes to transfer his credits from Duke University to another institution may request transcripts of his record. A minimum fee of one dollar, payable in advance, is charged for a single copy. A charge of $.50 will be made for each additional copy on the same order. Requests should be directed to the Central Records Office.

Fee Adjustment with Change of Registration

Although tuition and fees are due and payable on the date of fall and spring registration, under certain circumstances the Bursar may arrange for proration of these charges. For fee adjustment arising from change of registration, see Registration, change of.

Stipends and Income Tax

Ordinarily stipends awarded under fellowships and scholarships are not subject to income and Social Security tax. However, a portion of the award to graduate assistants and research assistants may be subject to both. The Graduate Office will supply detailed information.

Living Accommodations

Housing

Rooms in residence halls are normally rented for the academic year, but for no period less than one semester or specified term. The rental charge for each person assigned to a double room in the Graduate Center is $325.00 for the academic year, and in Hanes Annex, $355.00 for the same period. A limited number of single rooms are usually reserved for returning students.

Each student assigned to the Town House Apartments is currently

charged $495.00 for the academic year on the basis of three individuals to an apartment. Utility charges are included in these rates.

Rates for apartments will be provided upon request to the Director of Housing Management.

Rooms in residence halls, Town House Apartments and apartment complexes may be reserved by applicants only if they have been accepted by the Graduate School and only after the required $25.00 room or security deposit has been made with the Duke University Bursar. This initial deposit is held until the room or apartment is vacated.

No refund on residence hall room rent or the rent for spaces in Town House Apartments is made to students who withdraw after the date of registration, except for those who involuntarily withdraw to enter the armed services. Such refunds will be made in accordance with the University's established schedules. Rental rates are subject to change prior to the beginning of the 1969-70 academic year.

For further information on housing facilities, see Living Accommodations in the chapter on Student Life.

Food Services

Food service, on both the Woman's College Campus and the West Campus, is described under Living Accommodations. The cost of meals approximates $2.50 to $3.00 per day, depending upon the needs and tastes of the individual.

Motor Vehicles

Each student possessing or maintaining a motor vehicle at Duke University shall register it annually at the beginning of the fall semester. If a student acquires a motor vehicle and maintains it at Duke University after academic registration, he must register it within five (5) calendar days after operation on the campuses begins. Resident students are required to pay an annual parking fee of $30.00 for each automobile and $10.00 for each two-wheeled motor vehicle. If a vehicle is removed from the campus permanently prior to February 15 and its decal returned to the place of registration by that date, there will be a partial refund on the registration fee.

At the time of registration of a motor vehicle, the following documents must be presented: (a) state vehicle registration certificate; (b) valid driver's license; (c) satisfactory evidence of automobile liability insurance coverage with limits of at least $10,000 per person and $20,000 per accident for personal injuries, and $5,000 for property damage, as required by the North Carolina Motor Vehicle Law.

Student Aid

The principal forms of graduate student financial support available at Duke University are fellowships, scholarships, assistantships, part-time instructorships and tutorships, loans, and part-time degree-related employment within University agencies.

Application for Awards

Prospective Students

Persons applying to the Graduate School for admission and award (see application form) will receive consideration for all suitable forms of financial aid available in the Duke departments in which they choose to do their major study. Unless specifically called for in the descriptions below, it is *not* necessary to designate on the application form the desire to be considered for a particular award (e.g., NDEA Title IV Fellowship, NSF Traineeship) or to make inquiry separate from the application for admission. Applications for admission and award, along with all supporting documents, must be submitted on or before February 15. Notification of awards offered other than assistantships will be sent in late March. Late applications will be considered, should any vacancies occur in the list of appointees.

Further information and application forms may be obtained from the Dean of the Graduate School, Duke University.

Current Students

Students currently enrolled in the Graduate School who desire consideration for financial assistance in the ensuing academic year should make their desire known to the Director of Graduate Studies in their major department by filing in the Graduate School Office an Application for Graduate School Award. This application should be filed by February 15. Former students not currently enrolled who plan to resume their studies in the ensuing year and who wish consideration for an award should also file this application. Application forms are available in the Graduate School Office and in the departments. Decisions are generally announced in late March.

Payments to Holders of Awards

Payment of stipends to graduate students holding awards begins around September 30, and will be made the last of each month thereafter. Award holders should inquire in their departmnets to ascertain the particular arrangements associated with their awards.

Fellowships

University Fellowships

University Fellowships funded by Duke University are available to students in the departments of the Graduate School for study during the academic year. Stipends range from $2,400 to $3,700. In 1968-69 forty-four graduate students held these Fellowships.

Endowed Fellowships

Special endowment funds make available approximately thirty James B. Duke Fellowships and one Angier B. Duke Memorial Fellowship with stipends (level I and II) of $4,300, level III, $2,900; four Ottis Green Foundation Fellowships in Humanities or Social Sciences of $2,600; seven Gurney Harriss Kearns Fellowships in Religion ranging up to $2,800. Students are nominated for these Fellowships by their departments and selection is made by faculty committees.

*Federal Fellowships and Traineeships***

National Defense Education Act, Title IV Fellowships. Duke University participates in this program, the purpose of which is to encourage and assist graduate students to prepare for careers as teachers in the nation's colleges and universities. The Fellowships are three-year awards, with academic year stipends of $2000, $2200, and $2400 in the three years, plus cost of tuition and non-refundable fees. Eligible dependents receive allowances of $400 for the academic year. Fellows choosing to study in the summer receive an additional stipend of $400, and a $100 allowance for eligible dependents. In 1968-69 there were 165 students holding these Fellowships. Nominations for these awards originate in the department of major study.

National Defense Education Act, Title VI Fellowships. The purpose of this program is to encourage persons to undertake advanced training in modern foreign languages and related area studies not commonly taught in the United States for the further purpose of developing nation-wide competence in such languages and the areas in which they are spoken. World areas in which National Defense Foreign Language Fellowships are offered at Duke University are South Asia and Eastern Europe. In addition to pursuing the normal work toward their degree, Fellows must engage during their tenure in intensive study in a language of the world area. The Fellowships carry academic year stipends of $2250, plus tuition and allowances of $600 for each eligible dependent up to four. In 1968-69, ten students at Duke University held NDFL

**U.S. citizenship is generally a requirement for eligibility.

Fellowships. Interested persons should obtain a separate application form from the Director of Graduate Studies in their major department.

National Science Foundation Graduate Traineeships. Through the National Science Foundation Duke University makes available Graduate Traineeships to outstanding students who intend to pursue studies in the biological, physical, and social sciences. Award benefits are stipends of $2400, first year level; $2600, intermediate level; and $2800, terminal year level, all for twelve-month tenure. Stipends are prorated if a nine-month tenure is chosen. Benefits also include tuition and dependent's allowances of $500. Thirty-one students held Graduate Traineeships in 1968-69. Nominations for Traineeships originate in the department. A smaller number of Summer Traineeships are available to students who have been teaching assistants during the academic year.

United States Public Health Service Traineeships. Several departments, under training grants from the United States Public Health Service, offer Traineeships to outstanding students pursuing work toward the doctoral degree in the supported fields of study. Award benefits are generally comparable to those for N.S.F. Graduate Traineeships, but interested students should consult separate departmental announcements for details of the program. In 1968-69, 135 students held USPHS Traineeships.

Special Fellowships

Cokesbury Graduate Awards in College Teaching

These awards, sponsored by the Board of Education of the Methodist Church, are designed to assist graduate students who are committed to a Christian philosophy of higher education and who intend to teach in college. The applicant must have been a member of the Methodist Church for at least three years, and must have been accepted for or be currently pursuing a program of graduate studies at one of the Methodist-related universities, including Duke University, approved for this program. Awards, for one year, vary in amount from $500 to $2,500.

Application must be completed before February 15. For further information and application forms, apply to the Dean of the Graduate School.

Charles W. Hargitt Research Fellowship in Zoology

The Charles W. Hargitt Research Fellowship in Zoology is devoted to the promotion of research in the field of cellular studies. It may be awarded to post-doctoral candidates or established investigators who desire to engage in research and to outstanding predoctoral candidates in

support of their graduate training. The recipient will be expected to engage in full-time research or training and will have no departmental duties. Research facilities will be provided. Appointment is for one year with the possibility of reappointment.

Inquiries and applications should be addressed to the Chairman, Charles W. Hargitt Fellowship Committee, Department of Zoology.

Shell Fellowships

In African Studies. Two fellowships are available to qualified students in social sciences who are preparing for careers in the State Department, including the foreign services of the United States, the United Nations, or other international agencies, or in research and teaching in international affairs in academic institutions within the United States. They must be citizens of the United States or presently residing permanently in the United States and intending to become citizens. The fellowships are intended to cover the expenses of field research in the preparation of doctoral dissertations. The stipend for each fellowship is $4,000 plus a reasonable amount for transportation expenses. Inquiries should be made to the Executive Secretary, Center for Commonwealth Studies, Duke University.

Exchange Fellowships with the Free University of Berlin

Duke University has an exchange arrangement with the Free University of Berlin which will provide fellowships for two graduate students to work during the regular academic year in Berlin. Departments will submit nominations to the Dean of the Graduate School before February 15.

Apprentice Teaching Fellowships—English, History, Religion

Twelve second- or third-year graduate students—five in English, four in History, and three in Religion—may be granted two-year fellowships with an annual stipend of $2800 plus tuition. Appointment results from recommendation of the department and selection by a Graduate School committee. The fellowship involves carefully directed apprentice teaching. The funds are provided by the Danforth Foundation.

Fellowships and Graduate Scholarships in Forestry

Information regarding special fellowships and graduate scholarships in forestry may be obtained from the Dean of the School of Forestry, Duke University, Durham, North Carolina.

Scholarships

University Scholarships

University Scholarships funded by Duke University are available to students in the departments of the Graduate School for study during the academic year. Stipends range from $850-$2,500. In 1968-69, 113 students held University Scholarships.

Summer Scholarships

A small number of Summer Scholarships ranging up to $300 are available to students who were engaged in full-time study during the academic year and wish to pursue full-time study during the Summer Session. Interested students should apply by letter to the Dean of the Graduate School.

Assistantships

Graduate Assistantships

Appointments as Graduate Assistants carry a total stipend ranging up to $4100 for the academic year. The value of stipend is determined by the fraction of time given to assisting, the qualifications of the assistant, and the nature of work assigned. In 1968-69, 104 students held Graduate Assistantships.

Research Assistantships

Appointments are for predoctoral candidates whose special training and qualifications enable them to serve as assistants to individual staff members in certain departments. Stipends range up to $4100, depending on the assisting time required. In 1968-69, 107 students held Research Assistantships.

Part-time Instruction

Several departments offering graduate work make use of exceptionally qualified graduate students as part-time instructors, tutors, and teaching assistants. These students are usually able to register for a graduate program of 9 units a semester.

Loans

Interested students of good academic standing may apply for Duke University loans either under the National Defense Education Act or

from Duke University sources. These loans usually bear lower rates of interest than commercial loans. Application should be made to Mr. W. O. Petty, Jr., 102B Allen Building, Duke University.

Because University loan funds are not large enough to handle the number of requests, students are encouraged to inquire concerning loan possibilities with the Higher Education Assistance Corporations in their home states, or with a lending institution near the student which may be a participant in the Federal Guaranteed Loan Program. Low interest loans under this program have provisions similar to those sponsored by the National Defense Education Act.

University Registration and Regulations

Registration

Who Must Register

(1) All students who enter course work or residence for credit; (2) all students who have completed minimum requirements for an advanced degree, but continue to use the facilities of the University in their research; (3) all students in *in absentia* status; (4) all students who wish merely to audit a course or courses.

Registration Periods

After the applicant has received notification of his admission to the Graduate School and has returned his statement of acceptance of admission, he may present himself for registration. During the registration periods, announced in the *Bulletin*, he first confers with the Director of Graduate Studies of his major department, who prepares and signs a course card, listing the course work to be taken during the semester. The student then presents this course card to registration officials, who enroll him officially in his courses. After his first registration period as a current student he will pre-register at the stated times for pre-registration.

Failure to pre-register incurs the penalty for late registration. *Former students* who intend to register to resume a degree program must give the Department and the Dean notice of this intention two months before registration.

Late Registration. All students are expected to register or pre-register at the times stated in the *Bulletin*. Those registering late, including those who are obliged to register *in absentia*, are subject to a *late registration fee of $10.00.*

Change of Registration. During the academic year within a period of *fourteen days* from the day of registration, registration may be changed with the approval of the Director of Graduate Studies if no reduction in fee is entailed, or, if fees are to be refunded, only with the approval of the Dean. A period of five weeks from the date of registration is provided for changes resulting from passing a preliminary examination. During the first thirty days from the registration date, the only permissible change is dropping course-seminar registration and adding equivalent units of research, with the approval of the Director of Graduate Studies, the instructor of the course, and the Dean.

Academic Regulations

*Residence**

Although ideally graduate study consists principally of individual reading, research, and laboratory experimentation under guidance, academic progress in the United States is generally measured and recorded in terms of course hours and credits. Credit for courses and seminars, research, and residence, and corresponding tuition and fees are stated in terms of units. According to conventional measurement, one unit is equivalent to one semester hour. The term *residence* designates full-time study and research in close proximity to the facilities provided, as opposed to part-time study incidental to a full-time occupation. For purposes of satisfying the residence requirement of the various degrees, *residence* of one year is defined as two successive academic semesters of *no less* than nine units registration each semester. (See Summer Session for *residence* required of master's candidates engaged solely in summer study.)

Course Load

A graduate student is considered fully registered when he enrolls for the maximum credit his program requires. Required registration is set in consideration of the student's obligation to teach or assist and the stage he has reached in fulfilling his degree requirements. In the *academic year* normal registration for the *resident doctoral student* who does not

*See also section on Requirements for Degrees.

hold an appointment as part-time instructor or assistant or does not engage in part-time work is 15 units a semester or 30 units an academic year. The normal registration for the *resident doctoral student* who holds such an appointment or undertakes such work is either 12 units or a minimum of 9 units, depending upon the number of hours a week he is required to devote to such duties. The *resident doctoral student* carries such normal registration through the semester in which he passes the preliminary examination. If he remains in residence, he continues to register for a minimum of 3 units a semester until the dissertation is accepted. If he elects to go out of residence, he registers for 1 unit a semester *in absentia* in order to keep his program active.

The *resident* student engaged in a *master's* program requiring a thesis registers as though he were a *resident doctoral student.* However, once he has completed all requirements except the thesis, he may reduce his registration to 3 units per semester. If he decides to go out of residence, he registers for 1 unit *in absentia.* Regulations pertaining to a *resident* student engaged in a *master's* program requiring no thesis are identical to those described above for the doctoral student until the semester in which his course requirements will be satisfied. At that point, he may reduce his registration to the number of hours necessary for completion of his degree program.

In the Summer Session 6 units a term is maximum registration. Students resident in the academic year who wish to continue study and use of University facilities including Summer Session Student Health during the summer must register for 1 unit in the first Summer Session term. This registration provides use of these facilities for both terms.

The registration of 1 unit a semester *in absentia* provides occasional consultation with the thesis or dissertation supervisor. It may be waived for military duty or serious problems of health. Except in the semester in which a final examination is scheduled, every student is allowed two semesters of *in absentia* registration *without fee* provided that the student is a master's degree candidate who has completed his course and language requirements or is a doctoral candidate who has passed his preliminary examination. The student qualifying must register at the proper time each semester as *"In Absentia-no fee."* The student who takes advantage of this provision while completing a master's program may not again claim it should he proceed into a doctoral program.

It is necessary to be a fully registered student according to the regulations listed above in order to establish eligibility for library carrel and laboratory space, for student housing, for University and some outside loans, for Student Health service (including the voluntary Eaves plan coverage), and for reporting status for military duty.

Credits Earned Outside This Graduate School

(1) ***Graduate Credit Earned before the A.B. Degree Is Granted.***

Ordinarily no credit will be allowed for graduate courses taken before a student has been awarded his A.B. or B.S. degree. However, an undergraduate student at Duke University who, at the beginning of his final semester, lacks no more than 9 semester hours of fulfilling the requirements for the A.B. or B.S. degree, may obtain permission from the Dean of the Graduate School to enroll for graduate courses sufficient to bring his total program to fifteen hours a week. Such graduate courses will be credited toward the A.M., M.S., M.Ed., or M.A.T. degree, provided that the student meets the requirements for admission to the Graduate School, and that he is duly registered in the Graduate School at the beginning of the semester in which he intends to earn graduate credit.

(2) ***Transfer of Graduate Credits.*** Credit for graduate course work earned at another institution will be determined only after a student has spent one semester at Duke University. After completing his first semester, the student through his Director of Graduate Studies should file a request that his credits be reviewed and a decision be made.

(3) ***Graduate Credit for Courses Taken in the School of Law.*** Upon the recommendation of the Director of Graduate Studies, and upon the approval of the Dean of the Graduate School, students in the social sciences may take certain courses in the School of Law for graduate credit. In some instances courses in the School of Law may be considered as fulfilling a student's requirements for a minor. To register for such courses, the student should present a letter from his Director of Graduate Studies to the Dean of the School of Law requesting permission to register for certain specified courses.

(4) ***Reciprocal Agreements with the Consolidated University of North Carolina and with North Carolina College.*** Under a plan of co-operation between the University of North Carolina and Duke University, students regularly enrolled in the Graduate Schools of the University of North Carolina during the regular academic year, and paying full fees to that institution, may be admitted to a maximum of two courses per semester in the Graduate School of Duke University upon payment of a nominal registration fee of two dollars and of any other special fees regularly required of all students. Under the same arrangements, students in the Graduate School of Duke University may be admitted to course work at the University of North Carolina. A similar arrangement exists with North Carolina College.

Grades

Grades in the Graduate School are as follows: *E*, *G*, *S*, *F*, and *I*. *E* (exceptional) is the highest mark. *G* (good) and *S* (satisfactory) are the remaining passing marks. *F* (failing) is below passing, and *I* (incomplete) indicates that some portion of the student's work is lacking, *for an acceptable reason*, at the time the grades are reported. The instructor who gives

an *I* for a course specifies the date by which the student must have made up the deficiency, in no case more than one calendar year from the date the course ended. If the course is not completed, the grade of *F* is entered upon the student's record unless his appeal to the Dean for the grade *No Credit* is approved. The grade of Z indicates satisfactory progress at the end of the first semester of a two-semester course. It will be changed to whatever grade is appropriate upon the completion of the course. A grade of *F* in a major course normally occasions withdrawal from a degree program not later than the end of the ensuing semester or term; a grade of *F* in a minor course occasions academic probation.

Courses Primarily for Undergraduates

Students granted provisional admission and others whose preparation is found deficient may on occasion be required as part of their program to take undergraduate courses as prerequisites to continued graduate study. Undergraduate courses thus taken and others elected by the student will carry no graduate credit.

In exceptional cases, 100-level courses *outside the major department* may be taken for graduate credit to a maximum of two one-semester courses or one year-course not exceeding a total of 8 units, when approved by the Director of Graduate Studies in the major department and in the department in which the course is listed and by the supervisor of the program. In order to receive credit for any such undergraduate work, the graduate student must normally earn a grade of at least B.

Withdrawal and Interruption of Program

From a Course. For permissible changes during the first thirty days after the registration date, see Change of Registration. If a course is dropped without the necessary approval, the permanent record will list the course as *Dropped Unofficially.* If a course is dropped after the thirty-day period, the status of the student at the time of withdrawal from the course will be determined and be indicated on the permanent record as *Withdrew Passing (W.P.) or Withdrew Failing (W.F.).*

From the Graduate School. The University reserves the right, and matriculation by the student is a concession of this right, to request the withdrawal of any student whose academic performance at any time is not satisfactory to the University. If a student wishes for any reason to withdraw from the Graduate School, he should notify both the Director of Graduate Studies in his major department and the Dean of the Graduate School prior to the date of his expected withdrawal. (For refunds upon withdrawal, see General Fees.) For withdrawal occasioned by academic failure, see above.

Students who find it necessary to interrupt their program of study for

a period longer than a summer vacation should, before departure, leave with the Graduate Office a statement of the reason for interruption, mailing address, and expected date of return. If they are subject to registration *in absentia,* they should arrange for such registration before departure.

A foreign student who after successfully completing a minimum of one semester's graduate study must withdraw for the purpose of returning home before the completion of a graduate program may with the approval of his major department request the Dean to issue him a Certificate of Graduate Study.

Size of Classes

Classes which carry graduate credit are limited in size to thirty students. In exceptional cases this regulation may be modified, but only by permission of the Dean of the Graduate School. Courses numbered from 200 through 299 may enroll not only graduate students but also an unspecified number of juniors and seniors, provided the undergraduates have an overall B average and approvals from both the course instructor and the Director of Graduate Studies.

Language Requirements

Because a requirement for the A.M. degree is mastery of one acceptable foreign language, and for the Ph.D. is mastery of two, the prospective graduate student should attain mastery of at least one acceptable foreign language and preferably two before applying for admission. The facilities for graduate study are highly specialized and costly. The student who must lay them aside to acquire what he could have learned as an undergraduate is wasting his time.

To prevent delay in meeting this requirement, students whose programs call for mastery of French, German, Russian, or Spanish are urged to take the appropriate ETS Graduate School Foreign Language test prior to registration. It should be noted, however, that at the time of the final examination in a master's program or of the preliminary examination in a doctoral program, language certificates more than six calendar years old will not be accepted toward fulfilling the language requirement.

Acceptable Languages

The languages normally taken are French, German, and Russian. A student may substitute for any one of these another language which has a definite relation to the candidate's program of work for the degree and for which an examination can be provided. Individual departments

are free to specify which languages they require, and they may require more than two.

Meeting the Requirements

Language requirements may be met before or after first registration in the following ways:

Before First Registration. 1. *By ETS Scores.* Educational Testing Service Graduate School Foreign Languages tests in French, German, Russian, and Spanish are offered to undergraduate and graduate students at many centers including Duke University Counseling Center on nationally uniform dates. (See the Calendar.)

2. *By Transcript.* With the permission of the Dean of the Graduate School and of the chairman of his program committee or of the Director of Graduate Studies, the *doctoral* student may file a transcript or other certification as evidence of having passed a comparable examination, other than an ETS test, at another graduate institution. The limitations are that (1) only one of the two doctoral requirements may be met in this way, (2) the other institution offers a doctoral program in the student's major and that the examination would have met a doctoral requirement there, and (3) the examination was passed no more than five years before first registration here.

After First Registration. 1. Students wishing to be examined in French, German, or Russian take the ETS test.

2. Students who wish to be examined in Spanish take the ETS test if they first registered in September 1967 or thereafter. If they registered before that date, they take either the ETS test or the locally prepared reading test. 3. Upon request, a locally-prepared reading test will be administered in Italian.

Reading examinations in other languages must be individually arranged, after approval of the language by the Dean. Each ETS examination requires a fee of $8. The student who requires a re-examination in the locally prepared reading examination at scheduled times will be charged $5 for each re-examination; if special times are necessary, the fee will be $10. Examinations at special times cannot be offered in French and Spanish.

Special Reading Courses

Special courses designed to assist graduate students in acquiring a reading knowledge of French or German are offered for three hours a week, French during the fall semester and occasionally also in the spring, German during the spring semester and the Summer Session. A student who registers for either course must reduce his normal load of graduate courses by three units, with no reduction in fees. *No auditors* are per-

mitted in these courses at any time. Undergraduates may not enroll during the academic year but may register, with permission of the Dean of the Graduate School, in the Summer Session if total registration permits.

Undergraduate Language Courses

Students whose programs require them to take elementary language courses numbered below 200 receive no graduate credit for the work so taken. If the student wishes to demonstrate his proficiency in the language to fulfill the language requirement for his degree, he must arrange for a reading examination after securing approval from the Dean.

Requirements for Foreign Students

Foreign students whose native language is not English are, during their first registration period, required to take a test for minimum competence in English. Such students, with the approval of the Director of Graduate Studies in their major department, may request permission of the Dean of the Graduate School to substitute English for the one foreign language required in the master's program or for one of the two in the doctoral program. If permission is granted, an additional advanced-level reading test in English will be arranged. (See Admission Procedure for Foreign Students.)

Standards of Conduct

Duke University expects and will require of all its students continuing loyal cooperation in developing and maintaining high standards of scholarship and conduct.

The University wishes to emphasize its policy that all students are subject to the rules and regulations of the University as currently in effect or from time to time put into effect by the appropriate authorities of the University.

Any student, in accepting admission, indicates his willingness to subscribe to and be governed by these rules and regulations and acknowledges the right of the University to take such disciplinary action, including suspension and/or expulsion, as may be deemed appropriate, for failure to abide by such rules and regulations or for conduct adjudged unsatisfactory or detrimental to the University.

Graduate Study in the Summer Session

The Summer Session of Duke University is divided into two terms. In 1969 the first term will begin on June 10 and will end on July 16. The second term will begin on July 18 and will end on August 23.

Graduate students who wish to work toward advanced degrees in the Summer Session, particularly in chemistry, economics, education, English, history, mathematics, religion, sociology, and zoology, will find a selection of courses offered by members of the Duke faculty and by visiting professors. Other departments ordinarily offering work leading to the A.M. degree are botany, political science, and psychology. Thesis research for advanced graduate students is available also in most other departments, such as botany, engineering, forestry, and physics.

Requirements for admission to the Graduate School are detailed above. Students who wish to be admitted to the Graduate School for work in the Summer Session should make application to the Dean of the Graduate School, as well as to the Director of the Summer Session, and should return the completed application, with supporting documents, before May 12, for admission to the first term, and before June 20, for admission to the second term.

Regulations Regarding Summer Work

(a) No graduate student may register for more than six units of credit in one Summer Session term. (b) All of the work required for the A.M.,

M.A.T., or M.Ed. degree must be completed within six years of the date of beginning. (c) Not more than one year of residence credit can be accepted toward the requirement for the Ph.D. and Ed.D. degrees for work completed during Summer Sessions. (See page 4 for a definition of a year's residence credit earned in Summer Sessions.) Students who complete in a Summer Session the work required by the University for the Master's degree will be granted the degree in September.

A Summer Session Bulletin containing information about graduate courses may be obtained by addressing a request to the Director of the Summer Session, Duke University, Durham, N. C.

Courses of Instruction

In general, courses with odd numbers are offered in the fall semester, those with even numbers in the spring semester. Double numbers separated by a hyphen indicate that the course is a year course and must normally be continued throughout the year if credit is received. A student must secure written permission from the instructor in order to receive credit for either semester of a year course. Double numbers separated by a comma indicate that although the course is a year course, credit may be received for either semester without special permission.

Normally, courses which bear no date are offered every year; those marked with an asterisk are offered only when the need arises. Double asterisks indicate that a course will not be given in 1969-70.

Note: In each department the number 399 is reserved to designate special (individual) readings in a specified area and supervised by a regular member of the Graduate staff, with credit of 1-3 units each registration, only one course per registration, and 9 units maximum in three successive registrations. The course is restricted to resident master's and doctoral programs, must have a completion exercise, and must carry a grade. When used it appears in this form: [Department] 399, Special Reading in [*area*],(*Instructor*), [*1 to 3*] units.

Anatomy

Professor Robertson, *Chairman* (401 Davison Building); Professor Buettner-Janusch, *Director of Graduate Studies* (Old Hospital Laundry); Professors Everett, Markee, Moses, and Peele; Associate Professors Becker, Duke and Reedy; Assistant Professors Bassett, Longley, Mahaley, and Prost; Associate Counce; Instructor Morgan

The Department of Anatomy offers graduate courses and training leading to the A.M. and Ph.D. degrees. Further information may be obtained from the Director of Graduate Studies of the department.

202. *Microscopic Anatomy.* Prerequisite: adequate training in histology or cytology. *Becker, Moses, and Robertson*

203. *Anatomy of the Nervous System.* Prerequisite: Gross Anatomy. *Peele*

204. *Neuroanatomical Basis of Behavior.* (Sept.-Jan.) 3 units. *Peele*

206. *Anatomy of the Back and Extremities.* Prerequisite: core course in Anatomy or equivalent. 2 units. *Bassett, Duke, and Markee*

208. *Anatomy of the Trunk.* Prerequisite: core course in Anatomy. 2 units. *Becker, Duke, and Markee*

216. *Anatomy of the Head.* Prerequisites: core course in Anatomy or the equivalent. 2 units. *Duke, Everett, and Markee*

220. *Dissection of Restricted Regions.* Prerequisite: core course in Anatomy or equivalent. 1 to 3 units. *Markee, Duke, and Bassett*

231. *Physical Anthropology.* Prerequisite: general biology, genetics. 3 units. (Listed also as Anthropology 231.) *Buettner-Janusch*

232. *Human Genetics.* Prerequisites: Anatomy 231, Zoology 131 (or an elementary course in biology including genetics) or permission of instructor. 3 units. (Listed also as Zoology 232 and Genetics 232.) *Buettner-Janusch*

244. *Topics in Cell Structure and Function.* Prerequisite: Zoology 243 (Botany 243) or equivalent and permission of instructor. (1968 and alternate years.) 2 units. (Listed also as Zoology 244.) *Moses (Anatomy) and Nicklas (Zoology)*

261. *History of Generation and Mammalian Reproduction.* 1 unit.

263. *History of Anatomy.* 1 unit.

264. *Mammalian Embryology and Developmental Anatomy.* 4 units.

301. *Gross Human Anatomy.* Prerequisite: adequate training in comparative anatomy and embryology. *Becker, Everett, Markee, Morgan, and Prost*

312. *Research. Becker, Buettner-Janusch, Duke, Everett, Markee, Moses, Peele, Prost, and Robertson*

313-314. *Anatomy Seminar.* 2 units. *Becker, Buettner-Janusch, Duke, Everett, Markee, Moses, Peele, Prost, and Robertson*

340. *Advanced Microscopic Anatomy.* Prerequisite: Anatomy 202 or equivalent. 4 units. *Robertson*

379. *Biophysical Cytology I.* Prerequisites: General Biology, Chemistry, Physics, Calculus. 3 units. *Longley, Reedy, Robertson*

380. *Biophysical Cytology II.* Prerequisites: microscopic anatomy, calculus, and one year each of general biology, physics, and general chemistry. 3 units. *Longley, Reedy, Robertson*

382. *Topics in Developmental Biology.* 3 units. Prerequisites: a course in Embryology or permission of the instructor. *Counce*

Art

Professors Hall, Heckscher (*Chairman*), Markman, and Patrick; Adjunct Professor Bier; Associate Professor Sunderland; Lecturer Meyvaert

A graduate program is in preparation; meanwhile the following courses are suggested as possible minors for students majoring in anthropology, history, literature, philosophy, religion, psychology, or sociology, or for students in any other interested department.

217. *Aegean Art.* 2 units. *Markman*

218. *Early Greek Art.* 3 units. *Markman*

221-222. *History of Aesthetics.* 6 units. *Patrick*

233. *Early Mediaeval Architecture.* 3 units* *Sunderland*

234. *Romanesque Sculpture.* 3 units.* *Sunderland*

239. *Architecture of Britain.* 3 units. *Hall*

240. *Architecture of North America.* 3 units. *Hall*

241-242. *Latin American Art.* 6 units. *Markman*

243. *The Art of the Illuminated Manuscript.* 3 units. *Mayvaert*

249. *Pre-Columbian Art.* 3 units. *Markman*

251-252. *Research.* 6 units. *Heckscher*

292. *Research Problems in the Collections of the North Carolina Museum of Art.* 3 units.* *Bier*

Asian Languages

Hindi-Urdu 200-201. *Special Studies in South Asian Languages.* Prerequisite: Consent of instructor. 6 units. *Staff*

The course is offered as an enrichment for students interested in the South Asian subcontinent and may be taken as a general elective by advanced undergraduate students. No major work is offered in Hindi-Urdu.

For offerings in **Chinese** and **Japanese**, see *Bulletin of Undergraduate Instruction.*

Biochemistry

Professor Handler, *Chairman* (Medical Sciences Building); Professor Gross, *Director of the Genetics Division* (Medical Sciences Building); Professor McCarty, *Director of Graduate Studies* (Medical Sciences Building); Professors Bernheim, Guild, Hill, Kamin, Tanford, and Wakil; Associate Professors Fridovich, Harris, Kanfer, Kaufman, Kirshner, and Lynn; Assistant Professors Greene, Hall, Harriman, Joshi, Rajagopolan, Sage, Siegel and Wheat; Associates Holloway, Habig, and Nozaki

Graduate work in the Department of Biochemistry is offered leading to the Ph.D. degree. Preparation for such graduate study may take diverse forms. Undergraduate majors in chemistry, biology, mathematics, or physics are welcomed, but adequate preparation in chemistry is essential. Graduate specialization areas include protein structure and synthesis, enzyme action, and metabolism. The Division of Genetics of the Department, in cooperation with the University Program in Genetics (see page 123) offers Biochemistry students the opportunity to pursue advanced research and study to fulfill the requirements for the Ph.D. degree.

For Seniors and Graduates

203. *Chemistry of Natural Products.* Prerequisite: one year of organic chemistry; one semester of physical chemistry also recommended. 2 units. *Kanfer and Kaufman*

204. *Introductory Genetics.* Primarily for medical students, but graduate students may be admitted with the instructor's permission. (Listed also as Genetics 204.) 3 units. *Gross and others of the University Program in Genetics*

S208. *Laboratory Methods in Biochemistry.* Prerequisites: Biochemistry 203, 303, and 308, or equivalent. 2 units. *Joshi*

M241. *General Biochemistry.* (For Medical Students.) 4 units. *Handler and Staff*

248. *Introductory Biochemistry.* Prerequisites: Chemistry 151, one year of college physics (second semester may be concurrent, Mathematics 22, or consent of the instructors. 3 units. *Kirshner and Rajagopalan*

250. *Biochemistry of Development.* 1 unit. *McCarty and Harris*

282. *Experimental Genetics.* Prerequisite: Consent of instructor. 2 units. *Hall, Harriman, and others of the University Program in Genetics*

For Graduates

303. *Macromolecules.* Prerequisites: Physical chemistry equivalent to Chemistry 161-162. 4 units. *Tanford and Hill*

308. *Metabolism.* Prerequisites: Biochemistry 203 and 303, or by permission of the instructors. 5 units. *Kamin and Staff*

315. *Molecular Genetics.* Prerequisites: introductory courses in Biochemistry and Genetics. 3 units. *Guild and others of the University Program in Genetics*

345-346. *Biochemistry Seminar.* 1 unit per semester. *Sage*

347-348. *Special Topics.* 1 or 2 units per semester. *McCarty and Staff*

351-352. *Genetics Seminar.* 1 unit per semester. *Gross and others of the University Program in Genetics*

M354. *Biochemistry of Disease.* First and Second terms. 2 units. *Handler and Staff*

384. *Current Topics in Genetic Mechanisms.* Prerequisites: Genetics 280 or its equivalent and consent of the instructor. (Also listed as Genetics 384.) 1 unit. *Hall and others of the University Program in Genetics*

Botany

Professor Johnson, *Chairman* (354 Biological Sciences Building); Professors Anderson, Billings, Hellmers, Kramer, Naylor, Perry, and Philpott; Associate Professors Culberson, Stone, White, and Wilbur, *Director of Graduate Studies* (265 Biological Sciences Building); Assistant Professors Boynton and Searles

Graduate work in the Department of Botany is offered leading to the A.M. and Ph.D. degrees. Before undertaking graduate study in botany a student should have had in his undergraduate program at least 12 semester hours of botany beyond an elementary course, and related work in biological sciences. Some work in chemistry and physics will be desirable and, for some phases of botanical study, a necessity. Graduate Record Examination scores are required of all applicants. The student's graduate program is planned to provide a broad basic training in the various fields of botany, plus intensive specialization in the field of the research problem.

205. *Anatomy.* Prerequisite: permission of instructor. 4 units. *White*

209. *Lichenology.* Prerequisite: two semesters of botany. 3 units. *Culberson*

210. *Bryology.* 3 units. *Anderson*

212. *Phycology.* 4 units. *Searles*

221. *Mycology.* Prerequisite: one year of biological science. 4 units. *Johnson*

225-226. *Special Problems. All Members of the Graduate Staff*

240. *Evolution.* Prerequisites: introductory biology and genetics, or consent of instructor. Cytology recommended. 3 units. *Stone and Klopfer*

242. *Systematics.* Prerequisite: permission of instructor. 4 units. *Wilbur*

243. *Cytology.* Prerequisite: one year of botany or zoology. 4 units. *Anderson and Nicklas*

245. *Plant Diversity.* Prerequisite: one year of biology. 4 units. *Culberson*

246. *Ecology.* Prerequisite: permission of instructor. 4 units. *Billings*

250. *Plant Biosystematics.* Prerequisite: Botany 52 and 55 and either 243 or a course in genetics or their equivalents. 3 units. *Stone and White*

251. *Physiology.* Prerequisite: permission of instructor. (Also listed as Forestry 201.) 3 units. *Hellmers*

252. *Plant Metabolism.* Prerequisite: Botany 151 or equivalent; organic chemistry recommended. 4 units. *Naylor*

254. *Plant-Water Relations.* Prerequisite: Botany 151 or equivalent. 3 units. *Kramer*

255. *Plant Systematics.* Prerequisite: Botany 52 or equivalent. 4 units. *Wilbur*

256. *Community Analysis and Classification.* Prerequisite: Botany 156 or equivalent. 3 units.

257. *Principles of Plant Distribution.* Prerequisite: Botany 156 or equivalent. 3 units. *Billings*

258. *Physiology of Growth and Development.* Prerequisites: Botany 151 or equivalent; organic chemistry recommended. 4 units. *Naylor*

259. *The Environment.* Prerequisite: Botany 156 or equivalent. 3 units. *Billings*

280. *Principles of Genetics.* Prerequisites: Introductory courses in biology, chemistry and mathematics or equivalent. 3 units. *Boynton, Gillham and others of the University Program in Genetics*

305. *Vegetation of North America.* Prerequisite: Botany 156 or equivalent. 3 units. *Oosting*

359-360. *Research in Botany. All Members of the Graduate Staff*

383. *Current Topics in Developmental Genetics and Cytogenetics.* Prerequisites: Botany 280 or its equivalent and consent of the instructor. 1 unit. *Boynton and others of the University Program in Genetics*

Marine Laboratory

Four marine botany courses are given in the Duke University Marine Laboratory, Beaufort, N. C.; S205, Marine Microbiology; S207, Marine Mycology; S211, Marine Phycology; S220 Coastal Field Botany.

The University Program in Genetics

Genetics courses offered by the Botany Department are an integral part of this interdepartmental program. Refer to the announcement in this bulletin under *Genetics, the University Program* for description of the other offerings which include: 282, Experimental Genetics; 315, Molecular Genetics; 351-352, Genetics Seminar; 384, Current topics in Genetic Mechanisms; 385, Current topics in Population Genetics and Evolution.

Business Administration

Professors Keller and Volpp; Associate Professors Baligh, Dellinger, and Pondy; Assistant Professor Laughhunn

Graduate work in the Graduate School of Business Administration is to be offered leading to the M.B.A. degree beginning in September 1970. A program leading to the Ph.D. degree in Business Administration may be added about two years later. Before undertaking graduate study in Business Administration a student should have had in his undergraduate program at least one full year of calculus. There are no other specific course prerequisites. An undergraduate major with a solid background in rigorous analysis will be very helpful. Admission Test for Graduate Study in Business scores are required of all applicants. The student's program is planned to provide a thorough background in the underlying disciplines and in their application to the solution of problems of economic enterprises.

First Year Courses (Required)

B.Adm. 300-301. *Managerial Theory of the Firm.* 5 units Semester I and 4 units Semester II.

B.Adm. 310-311. *Foundations for Quantitative Analysis.* 5 units Semester I and 4 units Semester II.

B.Adm. 320-321. *Management of Information and Control Systems.* 2 units Semester I and 4 units Semester II.

B.Adm. 330-331. *Organization Theory and Management.* 4 units Semester I and 2 units Semester II.

B.Adm. 341. *Macroeconomic Analysis.* 2 units Semester II.

Second Year Courses—Fall Semester (Required)

The purpose of the work in the third semester of the M.B.A. program is to provide advanced tools of analysis and a general framework of understanding within which those tools can be applied. The relationships among the parts of the firm and the relationships between the firm and the various sectors of its environment can be classified into those which are competitive and those which are cooperative. (Obviously, the relationships between any two organizations are likely to contain both competitive and cooperative aspects.) The primary thrust of the work in this semester is focused on more advanced analysis of how the firm's internal relationships and actions are related to the firm's external relations and actions. Since the legal framework is closely related to these matters, an introduction to some aspects of the law is included. Prerequisites for this set of courses are the courses in the first-year M.B.A. program.

B.Adm. 312. *Operations Research.* 4 units.
B.Adm. 303. *Competitive Relations and Strategies.* 3 units.
B.Adm. 302. *Cooperative Relations and Decisions.* 2 units.
B.Adm. 332. *Organization Theory and Design.* 3 units.

The three courses immediately above are designed to lead into the courses described below. Thus, each of these three is taught during the first eleven weeks of the semester and the following courses will be taught during the latter three weeks of the semester.

B.Adm. 304. *Cooperative-Competitive Relations and Decisions.* 2 units.
B.Adm. 349. *Law as a Constraint for Business.* 2 units.

Second Year Courses—Spring Semester

This final semester of the M.B.A. program is oriented to bring to application the foundations built during the first three semesters. Hence, the bulk of the work in this semester is directed toward understanding and solving problems of the firm, using the tools of analysis and the conceptual framework developed earlier. The only specifically required courses are B.Adm. 350 and B.Adm. 390.

B.Adm. 350. *Public Policy of the Firm.* 3 units.
B.Adm. 390. *Practicum.* 4 units.
B.Adm. 351. *Finance.* 4 units.
B.Adm. 353. *Marketing.* 4 units.
B.Adm. 355. *Production.* 4 units.
B.Adm. 333. *Manpower Planning and Management.* 4 units.
B.Adm. 323. *Controllership.* 4 units.
B.Adm. 313. *Advanced Operations Research.* 4 units.

Chemistry

Professor Bradsher, *Chairman* (115 Chemistry Building); Professor Quin, *Director of Graduate Studies* (05 Chemistry Building); Professors Brown, Hauser, Hobbs, Krigbaum, Poirier, Strobel, and Wilder; Associate Professors Chesnut, Jeffs, McPhail, Smith, Toren, and Wells; Assistant Professors Henkens and Palmer; Adjunct Professor Peterlin; Adjunct Associate Professor Schindler

In the Department of Chemistry graduate work is offered leading to the A.M. and Ph.D. degrees. Before undertaking a graduate program in chemistry, a student should have taken an undergraduate major in chemistry, along with related work in mathematics and physics.

Graduate courses in the department are designed to provide a broad basic training in the fields of inorganic, organic, analytical, and physical chemistry. An important requirement for the Ph.D. degree is the successful completion, under the direction of a member of the staff, of a research

program leading to the solution of an original problem. The choice of the research problem, for either the A.M. or the Ph.D. degree, will determine the field of advanced specialization.

For Seniors and Graduates

216. *Nuclear Chemistry.* Prerequisites: introductory physics, analytical and organic chemistry. 3 units. *Toren*

217. *Inorganic Chemistry.* Prerequisite: one year of physical chemistry. 3 units. *Palmer*

234. *Chemical Instrumentation.* Prerequisites: Quantitative Analysis and Physical Chemistry; the latter may be taken concurrently. 3 units. *Strobel*

235. *Advanced Analytical Chemistry.* Prerequisites: Chemistry 132 and 162. 3 units. *Toren*

240. *Chemical Oceanography.* Prerequisites: One year of physics, mathematics through calculus, a year of analytical chemistry or physical chemistry; an introductory course in general oceanography or a course in physical oceanography, or permission of instructor. 6 units. *Stefansson*

252. *Advanced Organic Preparations.* Prerequisites: Quantitative Analysis and one year of Organic Chemistry. 3 units. *Brown*

253. *Intermediate Organic Chemistry.* Prerequisite: one year of Organic Chemistry. 3 units. *Wilder*

255. *Structural Analysis by Spectroscopic Methods.* 2 units. *Jeffs*

263. *Thermodynamics.* Prerequisite: one year of physical chemistry and one year of calculus. 3 units. *Smith*

264. *Biophysical Chemistry.* Prerequisites: Chem. 160 or 161. 3 units. *Henkens*

267. *Introductory Quantum Chemistry.* 3 units. *Hobbs*

271. *Introduction to Research.* 1 unit. *Brown*

275, 276. *Research.* 1 to 6 units. *All Members of the Graduate Staff*

281. *Laboratory in Organic Chemistry.* Permission of the Director of Graduate Studies required. 2 units. *Quin*

282. *Remedial Laboratory in Chemistry.* Permission of the Director of Graduate Studies required. 1 unit. *Toren*

For Graduates

306. *Special Topics in Physical Chemistry.* 3 units. *Hobbs*

315. *Advanced Inorganic Chemistry.* Prerequisite: Chemistry 217. 3 units.** *Palmer*

316. *Topics in Non-Metal Chemistry.* Prerequisite: Chem. 217 or equivalent. 3 units. *Wells*

317, 318. *Seminar in Inorganic Chemistry.* Prerequisite: Chemistry 217. 2 units. *Palmer and Wells*

331, 332. *Seminar in Analytical Chemistry.* Prerequisites: Chemistry 234. 2 units. *Strobel and Toren*

350. *Organic Reactions.* Prerequisite: Chemistry 253. 2 units. *Bradsher*

352. *Mechanisms of Organic Reactions.* Prerequisites: Chemistry 253. 2 units. *Hauser*

354. *Stereochemistry.* Prerequisites: Chemistry 253 and 255. 2 units. *Wilder*

355. *Special Topics in the Chemistry of Natural Products.* Prerequisites: Chemistry 255 and 354. 2 units.** *Jeffs*

356. *Heterocyclic Chemistry.* 2 units.** *Quin*

360. *Polymer Chemistry.* Prerequisite: Chemistry 263. 2 units. *Krigbaum*

361. *Advanced Polymer Chemistry.* Prerequisite: Chemistry 360. 2 units.** *Peterlin*

362. *Kinetics of Chemical Reactions.* Prerequisite: Chemistry 263. 3 units.** *Smith*

364. *Advanced Topics in Physical Chemistry.* Prerequisite: Chemistry 263. 2 units.** *Physical Chemistry Staff*

365. *Introductory Statistical Mechanics.* Prerequisites: Chemistry 263 or 267. 3 units. *Poirier*

366. *Statistical Mechanics.* Prerequisite: Chemistry 365. Corequisite: Mathematics 285. 3 units.** *Poirier*

368. *Quantum Mechanics.* Prerequisite: Chemistry 267. Corequisite: Mathematics 285. 3 units. *Chesnut*

373, 374. *Seminar.* 2 units. *All Members of the Graduate Staff*

Classical Studies

Professor Richardson, *Chairman* (312 Carr); Associate Professor Oates, *Director of Graduate Studies* (325 Carr); Professors Newton, Truesdale, Willis; Associate Professor Womble; Assistant Professor Stanley; Visiting Lecturer Birley

The Department of Classical Studies offers programs leading to the A.M. and Ph.D. degree with majors in Greek, Latin, and Ancient History and minors in the foregoing, Archaeology and linguistics. For regular admission to a major in Greek or Latin a student must offer three years of college study above the elementary level in one language and two college years in the other. Students wishing to major in Ancient History will be required on entrance to demonstrate satisfactory competence in both Greek and Latin for reading in the primary sources; failure to demonstrate such competence will require modification of the student's program to repair deficiency.

The Department's special requirements of students in addition to the general requirements of the University for the A.M. and for the Ph.D. set forth in the section on Courses of Study and Degree Requirements

of this *Bulletin* are presented in a sheet that may be obtained from the Director of Graduate Studies. They include for the A.M. a major and a minor field and for the Ph.D. a major and two minor fields, all to be chosen within the general discipline of Classical Studies; an Introductory Colloquium at entrance; a reading list; a comprehensive examination at the end of the first year of residence; and special requirements in seminar and course work and in the preliminary examination for the Ph.D. degree.

Greek

For Seniors and Graduates

208. *Sophocles.* 3 units. *Willis*
210. *Aristophanes.* 3 units. *Truesdale*
221. *Early Greek Prose.* 3 units. *Willis*
225. *Plato.* Selected dialogues and related passages illustrating the development of philosophical topics and stylistic motifs. 3 units. *Staff*

For Graduates

305. *Greek Seminar V.* 3 units. *Willis*
306. *Greek Seminar VI.* 3 units. *Stanley*

Latin

For Seniors and Graduates

203. *Epic: Vergil.* 3 units. *Newton*
204. *Epic: Lucan and Statius.* 3 units. *Richardson*
211. *Roman Oratory I.* 3 units. *Richardson*
212. *Roman Oratory II.* 3 units. *Womble*
221. *Mediaeval Latin I.* 3 units. *Newton*
222. *Mediaeval Latin II.* 3 units. *Newton*
241. *Advanced Latin Composition.* 1 unit. *Richardson*

For Graduates

305. *Latin Seminar V.* 3 units. *Richardson*
306. *Latin Seminar VI.* 3 units. *Newton*

Classical Studies

For Graduates

301. *Introduction to Classical Philology.* 3 units. *Willis and Graduate Staff*

Classical Studies (Ancient History)

For Seniors and Graduates

256. *The Fourth Century through Alexander.* 3 units. *Oates*
261. *The Roman Revolution, 146-30 B.C.* 3 units. *Staff*
262. *Roman under the Julio-Claudian.* 3 units. *Staff*
270. *The Rise of the Hellenistic Kingdoms.* 3 units. *Oates*

For Graduates

323. *Seminar in Ancient History III.* 3 units. *Oates*
324. *Seminar in Ancient History IV.* 3 units. *Staff*

Classical Studies (Archaeology)

For Seniors and Graduates

231. *Greek Sculpture.* 3 units. *Stanley*
236. *Roman Painting.* 3 units. *Richardson*

For Graduates

312. *Archaeology Seminar II.* 3 units. *Staff*

Related Courses in Other Departments

Philosophy 217; Religion 217, 313, 316, 318.

Under the terms of a cooperative agreement, graduate students of Duke University may, with the approval of the chairman of their major department, take any graduate course offered by the Department of Classics of the University of North Carolina by the payment of a nominal fee. A list of these courses will be sent upon request.

Comparative Literature

No graduate degree is offered in Comparative Literature. The following courses may serve in the minor programs of students in other departments. Professor Salinger is Chairman of the Department of Germanic Languages and Literature.

201, 202. *Romanticism.* 6 units. *Salinger*
203, 204. *Realism and Symbolism.* 6 units. *Salinger*
205. *Foundations of Twentieth-Century European Literature.* 3 units.* *Salinger*
Slavic 236. *Russian and Polish Romanticism.* 3 units. *Krynski*

Economics

Professor Blackburn, *Chairman* (302 Social Science); Professor Yohe, *Director of Graduate Studies* (313 Social Science); Professors Davies, de Vyver, Goodwin, Hanna, Kreps, Naylor, Rottenberg, Saville, Smith, and Spengler; Associate Professor Treml; Assistant Professors Clark, Condos, Finger, and Vernon

The Department of Economics offers graduate work leading to the A.M. and Ph.D. degrees. A student entering graduate work in Economics should have completed with satisfactory grades at least 12 semester hours of undergraduate work in economics, including 6 hours of Principles of Economics. Among the undergraduate courses of distinct advantage to the graduate student in Economics are general accounting, elementary statistics, intermediate economic theory, money and banking, international trade, and basic courses in philosophy, mathematics, and social sciences other than economics.

Requirements for the Ph.D. in economics include a core of courses in mathematical economics, statistical methods, micro- and macro-economic theory, economic history, and the history of economic thought. Economic growth and demography, money and banking, international trade, labor economics, public finance, industrial organization, statistics, and econometrics are optional fields, of which the student elects at least two in preparation for the preliminary doctoral examination. Course requirements for the Ph.D., including a minor field, should be completed in four semesters of residence.

For Seniors and Graduates

233. *State and Local Finance.* 3 units.* *Davies*

237, 238. *Statistical Methods.* Prerequisite: Economics 138 or consent of the instructor. 6 units. *Hanna*

243. *Econometrics I.* 3 units. *Naylor*

244. *Econometrics II.* 3 units. *Naylor*

262. *Trade Unionism and Collective Bargaining.* 3 units.† *de Vyver*

265. *International Trade and Finance.* 3 units.† *Finger*

293. *Soviet Economic History.* 3 units.† *Treml*

294. *Soviet Economic System.* Prerequisite: Economics 293 or permission of instructor. 3 units.† *Treml*

301. *Economic Analysis.* 3 units. *Naylor*

303. *Theory of Economic Decision-Making.* 3 units. Prerequisite: Economics 301 or its equivalent.

304, 305. *Seminar in Money and Banking.* 3 units each. *Yohe*

307. *Quantitative Analysis, I.* 3 units. *Naylor and Vernon*

†Graduate students in Economics normally will not receive credit for courses so marked. These courses may be taken for credit by non-Economics graduate students, with the consent of the instructor.

308. *Quantitative Analysis, II.* Prerequisite: Economics 307 or consen of instructor. 3 units. *Naylor and Vernon*

311. *History of Political Economy.* 3 units. *Spengler and Goodwin*

313, 314. *Seminar in Economic Theory.* Prerequisite: Economics 301 c its equivalent. 3 units each semester. *Staff*

316. *Seminar in Economics of Soviet-type Socialism. Treml*

317. *Seminar in Demographic, Population, and Resource Problems.* units. *Spengler*

318. *Dissertation Seminar.* 3 units. *Staff*

319. *Seminar in the Theory and the Problems of Economic Growth an Change.* 3 units. *Rottenberg and Spengler*

320. *Seminar in Trade Cycles, Employment, and Income Theory.* units. *Blackburn and Condos*

321. *Theory of Quantitative Economic Policy.* Prerequisite: Economic 320. 3 units. *Condos*

329. *Federal Finance.* 3 units. *Davies*

330. *Seminar in Public Finance.* 3 units. *Davies*

331. *Seminar in Economic History.* 3 units. *Smith*

340. *National Income.* 3 units.* *Hanna*

355. *Seminar in Labor Economics.* 3 units. *de Vyver*

358. *Seminar in Labor Market and Related Analysis.* 3 units. *Rotten berg*

365. *Seminar in International Economics.* 3 units. *Finger*

366. *Monetary Aspects of International Trade and Finance.* 3 unit *Clark*

386. *Seminar in Latin-American Economic Problems.* 3 units.* *Smit*

388. *Industrial Organization.* 3 units.* *Vernon*

389. *Seminar in Industrial and Governmental Problems.* 3 units.*

401. *Seminar on the British Commonwealth.* 3 units. *Spengler, Bra banti, and Preston*

Related Courses in Other Departments

Courses comprising a candidate's minor may be selected from fields o forestry, history, mathematics, philosophy, political science, and sociolog and anthropology, or from an area that complements the candidate's are of research interests in economics.

See for Program in Comparative Studies on Southern Asia and Th Population Studies Program in the chapter on Special and Cooperativ Programs.

Education

Professor Cartwright, *Chairman* (08D West Duke Building); Professo Hurlburt, *Director of Graduate Studies* (07 West Duke Building); Pro

fessors Bowman, Gehman, Githens, Hopkins, Petty, Shuman and Weitz; Associate Professors Ballantyne, Colver, C. Johnson, Katzenmeyer, Martin, Pittillo, Spaulding, and Sublett; Assistant Professors Carbone, Di Bona, and J. Johnson; Visiting Associate Professor Erickson; Lecturers Engelhart and Wasik

For Seniors and Graduates

Graduate work in Education is offered leading to the A.M., the M.Ed., the M.A.T., the Ed.D., and the Ph.D. degrees. For each of these degrees there are specific requirements and prerequisites, all of which may be found stated in detail in this *Bulletin*, pp. 4-19. Department requirements and prerequisites for all of these degrees may be obtained from the Director of Graduate Studies.

From the courses listed below, plus several in related disciplines, a selection may be made which will meet North Carolina requirements for the Advanced Principal's Certificate and the Superintendent's Certificate.

(Some courses below are offered only in the Summer Session; see the Summer Session *Bulletin.*)

These programs are accredited by the National Council for Accreditation of Teacher Education for the preparation of elementary and secondary school teachers and school service personnel with the Doctor's degree as the highest degree approved.

201. *Teaching and Supervision of Arithmetic.* 3 units. *Petty*

202. *Comparative and International Education: Industrialized Nations.* 3 units. *Di Bona*

203. *Principles of School Administration.* 3 units. *Hurlburt and Pittillo*

204. *The School as an Organization.* 3 units. *Martin*

205. *Curriculum Problems in Secondary Education.* 3 units.* *Cartwright*

206. *Philosophical Analysis of Educational Concepts.* 3 units. *Carbone*

207. *Social History of Twentieth-Century American Education.* 3 units. *C. Johnson*

211. *The Problem Child.* 3 units. *I. Gehman*

213. *Elementary-School Organization and Administration.* 3 units.* *Sublett*

215. *Secondary Education: Principles.* 3 units. *Cartwright, Githens, Shuman, and C. Johnson*

216. *Secondary Education: Internship.* 6 units. *Cartwright, Githens, Hurlburt, Shuman, and C. Johnson*

217. *The Psychological Principles of Education.* 3 units. *Gehman, Weitz, and Spaulding*

218. *Comparative and International Education: Developing Societies.* 3 units. *Di Bona*

219. *Comparative and International Education: South Asia.* 3 units. *Di Bona*

223. *Teaching the Language Arts.* 3 units.*

225. *The Teaching of History and the Social Studies.* 3 units. *Car*
wright

226. *Teaching Reading in the Elementary School.* 3 units. *J. Johnson*

229. *Formal and Informal Classroom Diagnosis of Reading Disabili*
Cases. 3 units. *J. Johnson*

233. *Improvement of Instruction in English.* 3 units. *Shuman*

234. *Secondary-School Organization and Administration.* 3 units. *Pittil*

236. *Teaching Reading in the Secondary School.* 3 units.* *J. Johnso*

237. *The Teaching of Literature in Secondary Schools.* 3 units. *Shuma*

238. *Content, Supervision, and Administration of Reading Program*
3 units. *J. Johnson*

239. *The Teaching of Grammar, Composition, Mechanics and Usag*
in Secondary Schools. 3 units. *Bowman and Shuman*

240. *Career Development.* 3 units. *Ballantyne and Colver*

241. *Principles of Guidance.* Prerequisite: 6 hours of psychology o
educational psychology. 3 units. *Ballantyne and Colver*

243. *Personality Dynamics.* Prerequisite: 6 hours of psychology o
educational psychology. 3 units. *Gehman*

244. *Counseling Techniques.* Prerequisites: Education 243 and 258 o
equivalent, which may be taken concurrently. 3 units. *Gehman*

245. *Theories of Counseling.* 3 units. *Weitz*

246. *The Teaching of Mathematics.* 3 units. *Reynolds*

248. *Practicum in Counseling.* Prerequisite: Education 244. 3 unit
Staff

249. *Introduction to Exceptional Children.* 3 units. *Erickson*

250, 251. *Teaching Emotionally Disturbed Children: Internship.* 3 uni
each semester. *Gehman*

252. *The School in the Legal Structure.* 3 units.* *Martin*

253. *Law and Education.* 3 units. *Martin*

255. *Assessment of Abilities.* 3 units. *Colver*

258. *Assessment of Personality, Interests, and Attitudes.* Prerequisites
Education 243 and 255, or approval of instructor. 3 units. *Weitz an*
Colver

260. *Introduction to Educational Research.* 3 units. *Katzenmeyer an*
Engelhart

261. *Intermediate Educational Research.* Prerequisite: Education 26
or its equivalent. 3 units. *Katzenmeyer and Engelhart*

266. *Science in the Elementary School.* 3 units.* *Githens*

276. *The Teaching of High-School Science.* 3 units. *Githens*

285. *Audio-Visual Aids in Education.* 3 units.

290. *Administration of School Property.* 3 units.* *Pittillo*

291. *Public and Community Relations of Schools.* 3 units.

'or Graduates

300. *Individual Assessment of Intelligence.* Prerequisite: Education 55. 3 units. *Ballantyne*

311. *Group Counseling.* Prerequisite: Education 244 and Education 45. *Gehman*

315. *Seminar in Secondary-School Teaching.* 3 units. *Hurlburt*

323. *Public School Finance.* 3 units.* *Pittillo*

332. *Supervision of Instruction.* 3 units. *Hurlburt*

333. *Seminar in Higher Education.* 3 units. *Hopkins*

335, 336. *Seminar in School Administration.* 3 units each semester. *Hurlburt, Petty, Pittillo, and Sublett*

337. *Seminar in Community College Organization.* 3 units. *Hurlburt*

338. *Seminar in Educational Supervision.* Open to students who have ompleted Education 232 or its equivalent. 3 units. *Hurlburt*

339. *Seminar in Curriculum.* 3 units. *Cartwright and Sublett*

340. *Seminar in Social Studies Curriculum.* 3 units. *Cartwright*

341. *Seminar in Elementary School Curriculum.* 3 units. *Sublett*

350, 351. *Directed Activities in Education.* Prerequisite: approval of nstructor. 3 units each semester. *Staff*

354. *Seminar in Law and Educational Organization.* Open to students vho have completed Education 204 and 253 or their equivalents, or by onsent of instructor. 3 units. *Martin*

360. *Seminar on Instructional Strategies.* 3 units. *Spaulding*

Engineering

ames Lathrop Meriam, Ph.D., *Dean* (136 Engineering)

The School of Engineering offers programs of study and research lead- ng to the degrees of Master of Science and Doctor of Philosophy with a najor in civil, electrical, or mechanical engineering. These programs are lesigned to provide a fundamental understanding of the science of engi- neering, which is based on mathematics and the physical sciences, as well s a basic understanding of the art of engineering, which depends on uman imagination and judgment. Each Engineering graduate student articipates in seminars appropriate to his field of study.

A *minimum* of 30 units of earned graduate credit beyond the Bachelor's legree is required for the M.S. degree: 12 in engineering, 6 in related ninor work (normally mathematics or natural science), 6 in either the najor or minor subject or in other areas approved by the major depart- nent and the Dean of the School of Engineering, and 6 for a research- based thesis. There is no language requirement for this degree.

A *minimum* of 60 units of earned graduate credit beyond the Bachelor's legree is required for the Ph.D. degree: 24 in engineering, 12 in related ninor work (normally mathematics or natural science), 12 in either the

major or minor subject or other areas approved by the major departmen and the Dean of the School of Engineering, and 12 for a research-base dissertation. In addition, a reading knowledge of two foreign language which are relevant to the field of the dissertation is required (normall two of the following: French, German, or Russian). The Directors o Graduate Studies will, during the first period of full-time registration o each doctoral aspirant, appoint a Program Advisory Committee consistin of three members of the Graduate faculty in areas relevant to the student' intended major. The preliminary examination may be either writte oral, or a combination of written and oral components, at the discretio of the Committee.

Biomedical Engineering

Associate Professor Pilkington, *Chairman* (030 Engineering); Professo Moore; Associate Professors Clark and Thurstone; Assistant Professor Hammond and Wachtel

Biomedical engineering is often defined as the application of the con cepts and methods of the physical, mathematical, and engineerin sciences to biology and medicine. This definition covers a very broa spectrum ranging from formalized mathematical theory through experi mental science to practical clinical applications. The purpose of th graduate program in biomedical engineering is to encourage the optimun combining of engineering and biomedical course work with an interdis ciplinary research topic so that the graduates of this program can contri bute at the most advanced professional level to the interdisciplinary fiel of biomedical engineering. Presently students write theses and take thei degrees in Civil, Electrical, or Mechanical Engineering departments o Physiology. The major research areas availabe incude: biomechanics biomedical materials; biomedical modeling; data acquisition and pro cessing; and electrophysiology.

BME 201. *Introductory Biomedical Engineering.* Prerequisite: permis sion of instructor. 3 units. *Wachtel, Pilkington, Moore*

Civil Engineering

Professor Vesić, *Chairman and Director of Graduate Studies* (121 Engi neering); Professor Abeles (visiting), Brown, Bryan, Lash (visiting), Meriam; Associate Professors Hill, Kumar, and Palmer; Assistant Profes sors Dvorak, Muga, and J. Wilson

A student may specialize in one of the following fields of study for either the M.S. or the Ph.D. degree with a major in Civil Engineering: engineering mechanics, hydraulic engineering, materials science, sanitary engineering, soil and foundation engineering, or structural engineering

Appropriate combinations of these fields are also encouraged. Each graduate student participates in seminars appropriate to his field of study.

Under the Reciprocal Agreement with the Consolidated University of North Carolina, a student may include as a portion of the minimum requirements work offered by the Department of Environmental Sciences and Engineering of the University of North Carolina. Although minor work normally is taken in the natural sciences or mathematics, a student whose major interest relates to the social sciences may take relevant minor work in this area.

CE 201. *Advanced Mechanics of Materials.* 3 units. *Dvorak, Hill*

CE 202. *Experimental Mechanics.* 3 units. *Hill*

CE 204. *Plates and Shells.* Prerequisite: CE 201 or equivalent. 3 units. *Hill*

CE 205. *Elasticity.* Prerequisite: CE 201 or equivalent. 3 units. *Dvorak, Hill, Meriam*

CE 209. *Advanced Structural Dynamics.* Prerequisite: ME 203. 3 units. *Wilson*

CE 211. *Mechanical Behavior of Materials.* 3 units. *Kumar*

CE 212. *Structural Materials.* Prerequisite: CE 211. 3 units. *Dvorak, Kumar*

CE 221. *Incompressible Fluid Flow.* 3 units. *Muga*

CE 222. *Open Channel Flow.* 3 units. *Muga*

CE 223. *Flow Through Porous Media.* 3 units. *Muga*

CE 224. *Coastal and Tidal Hydraulics.* 3 units. *Muga*

CE 231. *Structural Engineering Analysis.* 3 units. *Brown*

CE 232. *Reinforced Concrete Design.* 3 units. *Brown*

CE 233. *Prestressed Concrete Design.* 3 units. *Brown*

CE 235. *Foundation Engineering.* 3 units. *Vesić*

CE 236. *Earth Structures.* 3 units. *Vesić*

CE 243, 244. *Sanitary Engineering Unit Operations and Process Design.* 6 units. *Bryan*

CE 250. *Engineering Analysis.* 3 units. *Wilson*

CE 303. *Elastic Stability.* 3 units.

CE 304. *Advanced Plates and Shells.* Prerequisite: CE 204. 3 units. *Hill*

CE 305. *Advanced Elasticity.* Prerequisite: CE 205, Math 286. 3 units.** *Dvorak*

CE 306. *Plasticity.* Prerequisite: CE 201. 3 units. *Dvorak, Wilson*

CE 307. *Viscoelasticity.* Prerequisite: CE 205 or equivalent. 3 units. *Dvorak*

CE 321. *Mechanics of Ideal Fluids.* Prerequisite: Mathematics 286 or equivalent. 3 units. *Muga*

CE 331, 332. *Advanced Structural Design and Analysis.* Prerequisite: CE 231 or equivalent. 6 units.** *Brown and Hill*

CE 335. *Mechanical Behavior of Soils.* 4 units.** *Vesić*

CE 336. *Advanced Soil Mechanics.* Prerequisite: CE 335. 4 units. *Vesić*

CE 337. *Elements of Soil Dynamics.* Prerequisite: CE 335 or consent of instructor. 3 units. *Vesić*

CE 365. *Advanced Topics in Civil Engineering.* 1 to 3 units. *Members of the Graduate Staff*

Electrical Engineering

Professor H. Owen, *Chairman* (130 Engineering); Professor Kerr, *Director of Graduate Studies* (108B Engineering); Professors Artley, Meier, and Wilson; Associate Professors Hacker, Joines, Marinos, Nolte, Pilkington, Thurstone, Wells; Assistant Professors George and Wang; Visiting Professor Trickey; Adjunct Associate Professor Burger

A student may specialize in any one of the following fields in working toward either the M.S. or the Ph.D. degree with a major in Electrical Engineering: solid-state materials and devices; ferromagnetics; superconducting circuits; instrumentation; electronics; microwaves; computers and automatic control; energy conversion; information processing; and biomedical engineering.

A minimum prerequisite to the graduate courses in electrical engineering is a basic knowledge of differential equations, electric and magnetic field theory, and the theory of networks. A previous course in modern physics is recommended.

For Seniors and Graduates

EE 203. *Random Signals and Noise.* 3 units. *Owen and Kerr*

EE 204. *Information Theory and Communication Systems.* Prerequisite: 203. 3 units. *Nolte*

EE. 205. *Signal Detection and Extraction Theory.* Prerequisite: EE 203 or permission of instructor. 3 units. *Nolte*

EE 206. *Switching and Logic Networks.* Prerequisite: permission of instructor. 3 units. *George*

EE 211. *Solid State Theory.* Prerequisite: permission of instructor. 3 units. *Pilkington and Hacker*

EE 212. *Solid State Materials.* Prerequisite: EE 211. 3 units. *Hacker*

EE 213. *Principles of Magnetism.* Prerequisite: EE 211 or permission of instructor. 3 units. *Hacker*

EE 215. *Semiconductor Physics.* Prerequisite: 211 or permission of instructor. 3 units. *Hacker*

EE 217. *Masers.* Prerequisite: permission of instructor. 3 units. *George*

EE 222. *Nonlinear Analysis.* Prerequisite: permission of instructor. 3 units. *Wilson*

EE 225. *Semiconductor Electronic Circuits.* Prerequisite: permission of instructor. 3 units. *Owen and Joines*

EE 227. *Network Synthesis.* Prerequisite: permission of instructor. 3 units. *George*

EE 241. *Linear Control Systems.* Prerequisite: permission of instructor. Credit not given for both EE 199 and EE 241. 3 units. *Wells*

EE 244. *Selected Topics in Control Systems.* Prerequisite: EE 203 and either EE 199 or EE 241. 3 units. *Wells*

EE 259. *Advanced Electric Energy Conversion.* Prerequisite: permission of instructor. 3 units.* *Trickey*

EE 265. *Advanced Topics in Electrical Engineering.* Prerequisite: approval of the Director of Graduate Studies and of instructor under whom work will be done. 1 to 3 units. *Staff*

EE 271. *Electromagnetic Theory.* Prerequisite: permission of instructor. 3 units. *Joines*

EE 272. *Applications of Electromagnetic Theory.* Prerequisite: EE 271. 3 units. *Joines*

For Graduates

EE 304. *Advanced Statistical Analysis and System Design.* Prerequisite: EE 203. 3 units. *Kerr*

EE 311. *Quantum Theory of Materials.* Prerequisites: EE 211 and Physics 316. 3 units.* *Pilkington*

EE 313. *Magnetic Processes in Materials.* Prerequisite: EE 213, or permission of instructor. 3 units. *Artley*

EE 315. *Semiconductor Devices.* Prerequisite: EE 215. 3 units. *Hacker*

EE 321. *Nonlinear Magnetic and Semiconductor Circuits.* Prerequisite: permission of instructor. 3 units. *Wilson*

EE 324. *Nonlinear Oscillations in Physical Systems.* Prerequisite: EE 222. 3 units. *Wilson*

EE 342. *Introduction to Optimal Control Theory.* Permission of instructor. 3 units. *Kerr*

EE 361, 362. *Electrical Engineering Seminar-Journal. Artley*

EE 371. *Advanced Electromagnetic Theory.* Prerequisite: EE 272. 3 units. *Artley*

EE 373. *Selected Topics in Field Theory.* Prerequisite: EE 272. 3 units. *Artley*

EE 375. *Interaction of Eectron Beams and Waves.* Prerequisite: EE 272. Selected laboratory work. 3 units. *George*

EE 399. *Special Readings in Electrical Engineering.* Prerequisite: approval of the Director of Graduate Studies. 1-3 units. *Members of the Graduate Staff*

Mechanical Engineering

Professor Chaddock, *Chairman* (142A Engineering); Professor Pearsall, *Director of Graduate Studies* (143 Engineering); Professors Kenyon,

Linderoth, Macduff, and Meriam; Associate Professors Clark, Elsevier, and Harman; Assistant Professors Buzzard, Shepard, Werner, and Wright; Adjunct Associate Professor Murray

Graduate Study is available to students seeking the M.S. and Ph.D. degrees with a major in mechanical engineering. Emphasis is placed on advanced study, research and design in three primary areas: thermal and fluid systems, design and control of machines and processes, and the development of materials. The department also participates in two interdisciplinary areas of graduate instruction and research, namely, biomedical and oceanographic engineering. The program includes opportunities for advanced experimental work as well as theoretical study. Special emphasis is offered in the particular areas of heat and mass transfer, thermodynamics, high-speed transportation, hydrodynamics, compressible flow, vibrations, system response and control, refrigeration and cryogenics, nuclear engineering, mechanical design and the science of materials. Increasing emphasis is placed on developing the creative abilities of graduate students and on relating the work to the evolving needs of modern engineering practice.

ME 202. *Theoretical Thermodynamics.* 3 units. *Kenyon and Harman*

ME 203. *Introduction to Advanced Mechanics.* 3 units. *Meriam and Macduff*

ME 211. *Theoretical and Applied Polymer Science.* 3 units.* *Clark and Pearsall*

ME 221. *Compressible Fluid Flow.* 3 units. *Harman and Buzzard*

ME 222. *Heat Transfer.* 3 units. *Chaddock and Werner*

ME 226. *Intermediate Fluid Mechanics.* Prerequisite: Egr 143. 3 units. *Buzzard*

ME 231. *Systems Response and Control.* 3 units. *Macduff and Wright*

ME 233. *Fluid Control Systems.* 3 units.* *Macduff*

ME 235. *Advanced Mechanical Vibrations.* 3 units. *Macduff*

ME 251. *Refrigeration and Cryogenics.* 3 units.* *Chaddock*

ME 255. *Energy Conversion.* 3 units.* *Elsevier and Harman*

ME 265. *Advanced Topics in Mechanical Engineering.* Prerequisites: approval of the Director of Graduate Studies and the instructor under whom work will be done. 1 to 3 units. *Members of the Graduate Staff*

ME 270. *Theory of Lubrication and Bearing Design.* 3 units.* *Linderoth*

ME 280. *Nuclear Reactor Power Cycles.* 3 units. *Kenyon*

ME 302. *Advanced Thermodynamics.* 3 units.* *Harman*

ME 311. *Behavior of Crystalline Solids.* 3 units.* *Pearsall and Shepard*

ME 322. *Mechanics of Viscous Fluids.* 3 units.* *Buzzard*

ME 323. *Convective Heat Transfer.* Prerequisites: Math 285, ME 222 or equivalent. 3 units.* *Chaddock*

ME 372. *Finite Element Techniques in Design.* 3 units.* *Macduff*

ME 399. *Special Readings in Mechanical Engineering.* Prerequisite:

Approval of the Director of Graduate Studies. 1-3 units.* *Members of the Graduate Faculty*

English

Professor Ferguson, *Chairman* (323 Allen Building); Professor Nygard, *Director of Graduate Studies* (321 Allen Building); Professors Boyce, Budd, Duffey, Gohdes, Lievsay, Patton, Reiss, Sanders, Smith, Stevenson, Turner, and Williams; Associate Professors Jones, Randall, and van Kluyve; Assistant Professors Jackson and Strandberg

The department offers graduate work leading to the A.M., M.A.T., and Ph.D. degrees. A statement of the requirements for the Ph.D. degree may be obtained from the Director of Graduate Studies.

For Seniors and Graduates

203, 204. *Chaucer.* 6 units. *Nygard, Reiss, and van Kluyve*

207, 208. *History of the English Language.* 6 units. *Nygard, Reiss, and van Kluyve*

209. *Present-Day English.* 3 units. *Nygard and Reiss*

210. *Old English Literary Tradition.* 3 units. *Nygard and Reiss*

211. *Middle English Literary Tradition.* 3 units. *Nygard and Reiss*

213. *Introduction to Folklore.* 3 units.** *Nygard*

215, 216. *Tudor and Stuart Drama, 1500-1642. Randall*

217. *Milton.* 3 units.** *Lievsay and Boyce*

218. *Spenser.* 3 units. *Lievsay*

219, 220. *The Eighteenth Century.* 6 units. *Boyce and Ferguson*

221, 222. *English Literature of the Early Nineteenth Century.* 6 units. *Patton, Sanders, and Stevenson*

223, 224. *English Literature of the Later Nineteenth Century.* 6 units. *Sanders and Stevenson*

227. *Literary Criticism.* 3 units.** *Lievsay*

229, 230. *American Literature, 1800-1865.* 6 units. *Budd, Jones, and Turner*

233, 234. *American Literature, 1865-1910.* 6 units. *Budd and Gohdes*

235, 236. *American Literature Since 1910.* 6 units. *Duffey and Strandberg*

237. *English Drama, 1642-1800.* 3 units.**

239. *Shakespeare.* 3 units. *Williams*

244. *Literary Biography.* 3 units.** *Sanders*

251, 252. *English Literature of the Seventeenth Century.* 6 units. *Lievsay, Williams, Randall, and Jackson*

261, 262. *English Literature of the Twentieth Century.* 6 units. *Smith*

264. *Major Developments in Contemporary American Poetry.* 3 units.**

266. *Recent Critical Thought.* 3 units.** *Duffey*

269, 270. *Southern Literature.* 6 units. *Turner*

277. *English Prose of the Sixteenth Century.* 3 units. *Lievsay*

278. *English Non-Dramatic Poetry of the Sixteenth Century.* 3 units.** *Lievsay*

For Graduates

304. *Studies in the Metaphysical Poets.* 3 units. *Lievsay*

306. *Studies in Chaucer.* 3 units.** *Nygard and Reiss*

311. *Beowulf.* 3 units. *Nygard*

313. *The Traditional Ballad and Folksong.* 3 units.** *Nygard*

315. *Studies in Middle English Literature.* 3 units.** *Nygard and Reiss*

320. *Medieval Romances.* 3 units.** *van Kluyve*

322. *Studies in Twentieth-Century American Literature.* 3 units.** *Duffey and Gohdes*

329. *Paleography.* 3 units.** *van Kluyve*

330. *Textual Criticism.* 3 units.** *Williams*

331. *Emerson.* 3 units.** *Gohdes*

332. *Whitman.* 3 units. *Gohdes*

333. *Hawthorne and Melville.* 3 units. *Turner*

334. *Studies in the Critical and Philosophical Ideas of Coleridge and Carlyle.* 3 units. *Sanders*

338. *Studies in American Realistic Fiction.* 3 units. *Budd*

339. *Studies in Shakespeare.* 3 units. *Williams*

340. *Studies in Renaissance English Prose.* 3 units. *Lievsay*

342. *Studies in Dryden and His Age.* 3 units.**

345. *The Eighteenth-Century Novel.* 3 units.** *Boyce*

346. *Studies in Swift.* 3 units.** *Ferguson*

347. *Studies in Victorian Poetry.* 3 units. *Stevenson*

348. *Studies in Victorian Fiction.* 3 units. *Stevenson*

349. *Studies in Nineteenth-Century Nonfictional Prose.* 3 units.** *Sanders*

363. *Studies in British Poetry of the Twentieth Century.* 3 units. *Smith*

374. *Studies in American Humor.* 3 units.** *Turner*

378. *Samuel Johnson's Literary Criticism and Related Topics.* 3 units.** *Boyce*

379. *Studies in English Romanticism.* 3 units.

English for Foreign Students. A non-credit semester course in English for foreign students. Restricted to registered undergraduate and graduate foreign students and, to capacity, to employees and wives of foreign students. Without fee for registered students who are permitted an audit without fee; otherwise a $5.00 fee.

Forestry

Professor Ralston, *Acting Chairman* (213 Biological Sciences Building); Associate Professor Knoerr, *Director of Graduate Studies* (308 Biological Sciences Building); Professors Anderson, Barnes, Harrar, Hellmers, and Kramer; Associate Professors Stambaugh, Woods and Yandle; Adjunct Associate Professor Vukovich; Assistant Professor Braaten

Major and minor work is offered in the natural and social scientific aspects of forestry and related areas of natural resources leading to the Master of Arts, Master of Science and Doctor of Philosophy degrees. Work for these degrees may be pursued in the biological science areas of dendrology and wood anatomy, forest ecology, tree physiology and biochemistry, forest pathology and forest entomology; in the environmental science areas of forest soils, meteorology and hydrology; in resource economics and policy; and in forest mensuration biometry and operations research. College graduates who have had specialized training in professional forestry or the related basic areas of the natural or social sciences may be considered for admission. Students may be restricted to the particular fields of specialization for which their academic background qualifies them. For information on professional training in forestry see *Bulletin of the School of Forestry.*

Biological Science

Dendrology and Wood Anatomy

249. *Identification of American Trees and Their Timbers.* 4 units. *Harrar*

290. *Wood Anatomy.* Prerequisites: one year of biology, Forestry 249 or equivalent. 3 units. *Harrar*

292. *Microtechnique of Woody Tissue.* Prerequisites: Forestry 249 and 290 or equivalent. 3 units. *Harrar*

398. *Timbers of the World.* Prerequisite: Forestry 290 or equivalent. 2 units. *Harrar*

Ecology

243. *Forest Ecology.* Desirable prerequisites: plant physiology, plant ecology, and Forestry 261, or equivalents. 3 units. *Woods*

247. *Biological Nucleonics.* Prerequisites: Consent of the instructor and one year each of college biology, chemistry, and physics. (Listed also as Zoology 247.) 3 units. *Woods and Fluke* (Zoology)

248. *Forest Regeneration.* 3 units. *Woods*

347, 348. *Forest Ecology Seminar.* Prerequisite: Forestry 243 or equivalent. 2 units. *Woods*

Physiology and Biochemistry

201. *Tree Physiology.* Prerequisite: permission of instructor. (Listed also as Botany 251.) 3 units. *Hellmers*

207. *Chemistry of Woody Tissues.* Prerequisite: Organic chemistry or consent of instructor. 3 units. *Barnes*

208. *Physiology of Wood Formation.* Prerequisite: Forestry 201 and 249 or equivalents. 3 units. *Barnes*

305. *Forest Tree Biochemistry.* Prerequisites: Forestry 201 and a course in biochemistry. 3 units. *Barnes*

Pathology

222. *Biology of Forest Insects and Diseases.* 4 units. *Anderson and Stambaugh*

223. *Forest Pathology.* Prerequisites: Botany 1 and 2, or equivalent. 3 units. *Stambaugh*

321. *Phytopathological Technique in Forestry.* Prerequisite: Forestry 223 or equivalent. 4 units. *Stambaugh*

322. *Microbiology of Forest Soils.* Prerequisites: Forestry 223, and mycology or bacteriology is recommended. 3 units. *Stambaugh*

385. *Seminar in Forest Protection.* Prerequisites: Forestry 223 and 230. 1 unit. *Anderson and Stambaugh.*

Entomology

222. *Biology of Forest Insects and Diseases.* (See description under Pathology above.)

230. *Forest Entomology.* Prerequisite: Forestry 222 or equivalent or consent of instructor. 3 units. *Anderson*

233. *General Entomology.* Prerequisites: one course in entomology or zoology or consent of the instructor. 4 units.** *Anderson*

331. *Toxicology of Insecticides.* Prerequisites: one course in entomology; organic chemistry is recommended. 3 units. *Anderson*

332. *Ecology of Forest Insects.* Prerequisite: one course in entomology or zoology or consent of the instructor. 3 units, 4 units with laboratory. *Anderson*

335. *Entomological Research Techniques.* 1 unit. *Anderson*

385. *Seminar in Forest Protection.*

Environmental Science

309, 310. *Environmental Seminar.* Prerequisite: consent of instructor. 2 units. *Ralston and Knoerr*

Soils

261. *Forest Soils.* Prerequisites: Chemistry 1 and 2, and Physics 1, or

equivalents; physical geology, mineralogy, petrology, and analytical chemistry are also desirable. 3 units. *Ralston*

362. *Forest Soil Physics.* Prerequisite: Forestry 261. 3 units. *Ralston*

364. *Soil Classification and Mapping.* Prerequisite: Forestry 261. 3 units. *Ralston*

366. *Forest Soil Fertility.* Prerequisites: Forestry 262 with analytical chemistry recommended. 3 units.** *Ralston*

Meteorology

203. *General Meterology.* 3 units. *Knoerr*

304. *Atmospheric Turbulence and Diffusion.* Prerequisites: Forestry 203 and differential equations or consent of instructor. 3 units.** *Vukovich*

306. *Dynamics of Local Atmospheric Motion.* Prerequisites: Forestry 203 and differential equations or consent of instructor. 3 units. *Vukovich*

308. *Topics in Biometeorology.* Prerequisites: Forestry 203 or equivalent and permission of instructor. 3 units. *Knoerr and Barnes*

344. *Micrometeorology.* Prerequisite: Forestry 203 or equivalent, calculus. 3 units.** *Knoerr*

Hydrology

342. *Hydrologic Processes.* 3 units. *Knoerr*

Resource Economics and Policy

269. *Resource Economics and Policy.* 3 units. *Staff*

270. *Economics of Forestry.* Prerequisite: at least one course in the principles of economics. 3 units. *Staff*

378. *Seminar in Forest Economics.* Prerequisites: Forestry 270 and 379 or consent of the instructor; advanced courses in economics and economic theory are desirable. 2 units. *Staff*

379. *Economic Analysis in Forestry.* Prerequisites: Forestry 270 or consent of instructor. 3 units. *Staff*

Statistics and Operations Research

210. *Analytical Techniques in Forest Utilization.* 3 units. *Yandle*

250. *Biometry.* 3 units. *Yandle*

251. *Theory and Methods for Sampling Biological Populations.* Prerequisite: Forestry 250 or consent of instructor. 3 units. *Yandle*

253. *Computer Science in Natural Resources.* 1 unit. *Braaten*

258. *Operations Research.* 3 units. *Braaten*

352. *Theory and Applications of Linear Statistical Models.* Consent of the instructor. 3 units. *Braaten*

353. *Design and Analysis of Experiments.* Prerequisite: Forestry 352. 3 units. *Braaten*

Special Studies and Research

299. *Special Studies in Forestry. Staff*

301, 302. *Advanced Studies in Forestry. Staff*

357, 358. *Research in Forestry.* Students with adequate training may undertake special research problems under direction of members of the faculty in the following branches of forestry and related natural resources. Credits to be arranged.

a. *Forest Ecology.* Prerequisite: Forestry 243 or equivalent. *Woods*

b. *Forest Soils.* Prerequisite: Forestry 261 or equivalent. *Ralston*

c. *Forest Economics.* Prerequisite: Forestry 270 or equivalent.

d. *Wood Anatomy and Properties.* Prerequisites: Forestry 249 and 290 or equivalents. *Harrar*

e. *Forest Mensuration and Biometry.* Prerequisites: Forestry 250 and 352 or equivalents. *Yandle and Braaten*

f. *Forest Entomology.* Prerequisite: Forestry 230 or equivalent. *Anderson*

g. *Forest Operations Research.* Prerequisite: consent of instructor. *Yandle and Braaten*

h. *Dendrology.* Prerequisite: Forestry 249 or equivalent. *Harrar*

i. *Forest-Tree Physiology.* Prerequisite: Plant physiology, plant or forest ecology. *Kramer, Hellmers, and Barnes*

j. *Forest Pathology.* Prerequisites: Plant physiology and Forestry 223 or equivalents. *Stambaugh*

k. *Forest Meteorology and Hydrology.* Prerequisites: Forestry 203, 342, or equivalents. *Knoerr*

l. *Forest Biochemistry.* Prerequisites: Plant physiology, organic chemistry. *Barnes*

368. *Field Seminars. Staff*

Related Courses in Other Departments

Many courses available in other departments of the university are related to the biological, environmental, economics and policy, and biometrics and operations research areas of forestry and other natural resources. These courses offered in botany, zoology, biochemistry, chemistry, physics, engineering, mathematics, economics, business administration, sociology and political science may be utilized by graduate students in the School of Forestry. For a specific listing of pertinent courses available in other departments see the *Bulletin of the School of Forestry.*

Genetics, The University Program

Professor Gross, *Director* (Medical Sciences Building); Professors Buettner-Janusch, Guild, Perry; Associate Professors Gillham and Ward; Assistant Professors Boynton, Hall, Harriman, and Kredich

The University Program in Genetics provides a coherent course of study in all facets of biology related to genetics. Graduate students registered in any of the biological sciences departments may apply to the faculty of the Genetics Program to pursue study and research leading to an advanced degree. It would be helpful if applicants for admission to the Graduate School indicated their interest in the Genetics Program at the time of application. Information describing more completely the research interests of the staff, facilities and special stipends and fellowships will be provided upon request.

For Seniors and Graduates

204. *Introductory Genetics.* 2 units. *Gross and Staff*

232. *Human Genetics.* Prerequisites: Anatomy 231, Zoology 131 (or an elementary course in biology including genetics), or permission of instructor. 3 units. *Buettner-Janusch*

280. *Principles of Genetics.* Prerequisites: introductory courses in biology, chemistry and mathematics. 3 units. *Boynton, Gillham, and Staff*

282. *Experimental Genetics.* May be taken concurrently with Genetics 280. Prerequisite: consent of instructor. 2 units. *Hall, Harriman, and Staff*

For Graduates

315. *Molecular Genetics.* Prerequisites: introductory courses in biochemistry and genetics. 3 units. *Guild and Staff*

351-352. *Genetics Seminar.* 1 unit each semester. *Gross and Staff*

383. *Current Topics in Developmental Genetics and Cytogenetics.* Prerequisites: Genetics 280 or its equivalent and consent of the instructor. 1 unit. *Boynton and Staff*

384. *Current Topics in Genetic Mechanisms.* Prerequisites: Genetics 280 or its equivalent and consent of the instructor. 1 unit. *Hall and Staff*

385. *Current Topics in Population Genetics and Evolution.* Prerequisites: Genetics 280 or its equivalent and consent of the instructor. *Ward and Staff*

Geology

Associate Professor Heron, *Chairman* (119 Science Building); Associate Professor Pilkey, *Director of Graduate Studies* (05 Science Building);

Associate Professors Furbish and Perkins, Assistant Professors Blanton and Lynts

The Department of Geology offers graduate work leading to the A.M. degree. An undergraduate degree in geology is not a prerequisite for graduate studies, but a student must have had or must take introductory courses in field geology, mineralogy, sedimentary rocks, stratigraphy, paleontology, and structural geology. In addition he must have had one year of college chemistry, one year of college physics, and mathematics through calculus.

Graduate courses in the Department of Geology are designed to provide training in the field of environmental geology with specialized training in oceanography, sedimentology, and paleontology.

An acceptable thesis is required.

For Seniors and Graduates

200. *Field Methods in Physical and Geological Oceanography.* 2 units. *Blanton, Lynts, Perkins, and Pilkey*

204. *Physical Oceanography.* Prerequisite: 1 year physics, chemistry, calculus and a general oceanography course or permission of instructor. 6 units. (Given at Beaufort only.) *Blanton*

205. *Geological Oceanography.* This course is not open to students who have completed Geology 206. 6 units. (Given at Beaufort only.) *Pilkey*

206. *Principles of Geological Oceanography.* Prerequisites: Geology 213 or consent of instructor. 3 units. *Pilkey*

208. *Shallow-Marine Geology.* Prerequisite: Geology 213 or consent of instructor. 3 units. *Perkins*

211. *Stratigraphic Principles and Applications.* Prerequisites: Geology 213. 3 units. *Perkins*

213. *Sedimentology.* Prerequisites: Geology 108 or consent of instructor. 3 units. *Pilkey*

214. *Sediments in Thin Section.* Prerequisites: Geology 213. 3 units. *Perkins*

222. *Sedimentary Minerals.* Prerequisites: Geology 102 or consent of instructor. 3 units. *Heron*

229. *Economic Geology.* Prerequisites: Geology 102. 3 units. On demand. *Furbish*

230. *Principles of Structural Geology.* Prerequisites: Physics 2, Geology 106, 108. 3 units. *Furbish*

241-242. *Invertebrate Paleontology.* Prerequisites: Geology 2 or consent of instructor. 6 units. *Lynts*

243.-244. *Micropaleontology.* Prerequisites: Geology 242, or consent of instructor. 6 units. *Lynts*

247. *Paleoecology.* Prerequisites: Geology 213, 242, or consent of instructor. 3 units. *Lynts*

251. *Geomathematics.* Prerequisites: Mathematics 22, or Mathematics 68 and 113, or consent of instructor. 3 units. *Lynts*

For Graduates

300. *Seminar in Oceanography.* 1 to 3 units. *Staff*
310. *Seminar in Stratigraphy.* 1 to 3 units. *Staff*
312. *Seminar in Sedimentology.* 1 to 3 units. *Staff*
320. *Seminar in Mineralogy.* 1 to 3 units. *Staff*
330. *Seminar in Geochemistry.* 1 to 3 units. *Staff*
340. *Seminar in Paleontology.* 1 to 3 units. *Staff*
350. *Seminar in Geomathematics.* 1 to 3 units. *Staff*
371, 372. *Advanced Topics in Geology.* To meet the individual needs of graduate students for independent study in various environmental sedimentary fields. 1 to 3 units. *Staff*

Germanic Languages and Literature

Professor Salinger, *Chairman and Director of Graduate Studies* (106 Foreign Languages); Professor Phelps; Assistant Professors Alt and Boletta

The Department of Germanic Languages and Literature offers graduate work leading to the A.M. degree. Students who expect to major in German should have had sufficient undergraduate courses in Germanic languages to enable them to proceed to more advanced work.

Students who wish to take courses in German for a minor should normally have completed a third-year course (in exceptional cases, a second-year) of college German with acceptable grades.

For Seniors and Graduates

201, 202. *Goethe.* 6 units.* *Phelps and Salinger*
203, 204. *Eighteenth Century.* 6 units. *Phelps*
205, 206. *Middle High German.* 6 units.* *Boletta*
207, 208. *German Romanticism.* 6 units.*
209, 210. *Kleist, Grillparzer, and Hebbel.* 6 units.* *Alt and Salinger*
211, 212. *Heinrich Heine.* 6 units.* *Salinger*
213. *Nineteenth-Century Literature.* 3 units. *Alt*
214. *The Twentieth Century.* 3 units.
215. *Seventeenth-Century Literature.* 3 units.*
216. *History of the German Language.* 3 units. *Boletta*
217. *Renaissance and Reformation Literature.* 3 units.*
218. *The Teaching of German.* 3 units.* *Phelps*
230. *German Cultural History.* 3 units.*
232. *Bibliography and Methods.* 3 units.*
233. *Advanced Composition.* 3 units.*

For Graduates

316. *The Austrian Novel from 1930 to the Present.* 3units.* *Salinger*
321, 322. *Germanic Seminar.* 3 units each semester.* *Phelps, Salinger, Alt, Boletta*
—. *Graduate Reading Course.* Graduate students only. No credit.

Related Courses in Other Departments

The following courses in other departments are recommended to students who are majoring in Germanics, as particularly valuable in building a proper background for Germanic studies:

(a) Graduate courses in foreign or comparative literature or philology, offered by the ancient and modern language departments, to be selected after consultation with the Germanic Languages Department.

(b) Graduate courses in history and philosophy, offered by those departments, to be selected after consultation with the Germanic Langauges Department.

History

Professor Colton, *Chairman* (235 Allen); Professor Durden, *Director of Graduate Studies* (230 Allen); Professors Alden, Curtiss, Embree, Ferguson, Hamilton, Hillerbrand, Holley, Lanning, Parker, Preston, Ropp, Watson, and Woody; Associate Professors Acomb, Davis, Ginter, Holly-day, Lerner, A. Scott, W. Scott, Silberman, TePaske, Uhalley, and Young; Assistant Professor Mauskopf

The Department of History offers graduate work leading to the M.A. and the Ph.D. degree. A thesis is required for the M.A. degree. A candidate for the degree of Doctor of Philosophy is required to prepare himself for examination in four fields, of which three shall normally be within history and of which one must be in American history or in the history of Western Europe. The choice and delimitation of fields is determined in consultation with his supervisor and the Director of Graduate Studies. The Department offers graduate instruction in ancient history, medieval Europe, modern Europe, American History, England and the Commonwealth, Russia, Latin America, the Far East in the modern period South Asia in the modern period, military history, and historiography.

Students may receive credit for either semester of a hyphenated course without taking the other semester if they obtain written permission from the instructor and the Director of Graduate Studies.

For Seniors and Graduates

201-202. *The History of Russia, 1801-1917.* 6 units.** *Curtiss*
203-204. *The United States, 1850-1900.* 6 units.** *Woody*

207-208. *City and Frontier in United States History.* 6 units. *A. Scott*
209-210. *Constitutional History of the United States, 1760 to the Present.* 6 units.
212. *Recent Interpretations of United States History.* 3 units. *Watson*
213-214. *The Old South.* 6 units.** *Woody*
221-222. *The Age of the Renaissance.* 6 units.
223-224. *The Old Regime and the French Revolution, 1661-1815.* 6 units. *Acomb*
225, 226. *The Age of the Reformation and Counter-Reformation.* 6 units. *Hillerbrand*
229. *Recent Interpretations of Modern European History.* 3 units. *Parker*
230. *The History of Spain.* 3 units. *TePaske*
231-232. *The Hispanic Colonies and Republics in America.* 6 units. *Lanning*
233-234. *The Institutional, Cultural, and Social History of Hispanic America.* 6 units. *Lanning*
237-238. *Europe in the Middle Ages, 359-1500.* 6 units. *Young*
241-242. *Modernization and Revolution in China.* 6 units. *Uhalley*
247. *The History of Modern India and Pakistan, 1757-1857.* 3 units. *Embree*
248. *The History of Modern India and Pakistan, 1857-1947.* 3 units. *Embree*
249-250. *Social and Intellectual History of the United States.* 6 units. *Holley*
263-264. *American Colonial History and the Revolution, 1607-1789.* 6 units. *Alden*
265-266. *Modern South America.* 6 units. *TePaske*
267-268. *From Medieval to Early Modern England.* 6 units. *Ferguson*
269. *British History, 1688-1867.* 3 units. *Hamilton*
270. *British History from Mid-Nineteenth Century.* 3 units. *Hamilton*
273, 274. *Topics in the History of Science.* 6 units. *Mauskopf*
275-276. *Central Europe, 1849-1914.* 6 units. *Hollyday*
277-278. *Reform and Politics in Nineteenth-Century United States.* 6 units. *Durden*
285. *Origins of Indian Civilization.* 3 units. *Sullivan*
287-288. *History of Modern Japan.* 6 units. *Silberman*
296. *Canada from the French Settlement to the Present.* 3 units. *Preston*
297. *The British Empire in the Nineteenth Century (from 1783).* 3 units. *Preston*
298. *The Commonwealth in the Twentieth Century.* 3 units. *Preston*

For courses in Ancient History which may be taken for credit in either History or Classical Studies, see Classical Studies 253—*Greece to the Orientalizing Period*; 254—*The Age of the Tyrants and the Persian Wars*;

255—*The Age of Pericles*; 256—*The Fourth Century through Alexander*; 257—*Social and Cultural History of the Hellenistic World from Alexander to Augustus*; 258—*Social and Cultural History of the Graeco-Roman World.*

For Graduates

303-304. *The United States in the Twentieth Century.* 6 units. *Watson*

305-306. *Seminar in British History.* 6 units. *Ferguson and Hamilton*

307-308. *Seminar in United States History.* 6 units. *Davis, Durden, Holley, and Watson*

309-310. *Seminar in American Colonial and Revolutionary History.* 6 units. *Alden*

315-316. *Seminar in Southern History.* 6 units.** *Woody*

317-318. *Seminar in the History of Western Europe.* 6 units. *Colton, Parker, and Scott*

321-322. *Seminar in the History of Spain, Hispanic America, and Inter-American Relations.* 6 units. *Lanning*

337-338. *Seminar in Medieval History.* 6 units. *Young*

343-344. *Seminar in the History of American Foreign Relations.* 6 units. *Davis*

347-348. *Seminar in Modern India.* 6 units. *Embree*

353-354. *Seminar on the Second British Empire and the Commonwealth of Nations.* 6 units. *Preston*

361-362. *Seminar in the History of Russia.* 6 units.** *Curtiss*

371-372. *Research Seminars.* Offered in conjunction with colloquia listed below. 6 units.

401. *Seminar on the British Commonwealth.* 3 units. *Braibanti, Preston, and Spengler*

Colloquia for Graduates

Each colloquium described below deals with an aspect of history by means of readings, oral and written reports, and discussion, with attention to bibliography. In some instances, students may take the equivalent of a research seminar in conjunction with the colloquium and will be credited with an additional 6 units by registering for **371.1-372.1, etc.**

351.1-352.1. *Military History.* 6 units. *Ropp*

351.2-352.2. *Modern European Intellectual and Cultural History.* 6 units. *Parker*

351.10-352.10. *Medieval Europe.* 6 units. *Young*

351.15-352.15. *The English Renaissance.* 6 units. *Ferguson*

351.18-352.18. *England, 1660-1832.* 6 units. *Ginter*

351.25-352.25. *Central Europe, 1849-1914.* 6 units. *Hollyday*

351.30-352.30. *European Diplomatic History since 1870.* 6 units. *W. Scott*

351.31-352.31. *Twentieth-Century Europe.* 6 units. *Colton*
351.40-352.40. *City and Frontier in United States History.* 6 units. *A. Scott*
351.45-352.45. *Reform and Politics in Nineteenth-Century America.* 6 units. *Durden*
351.46-352.46. *Twentieth-Century United States.* 6 units. *Watson*
351.47-352.47. *United States Diplomatic History.* 6 units. *Davis*
351.60-352.60. *Soviet History.* 6 units. *Lerner*
351.65-352.65. *Modernization and Revolution in China.* 6 units. *Uhalley*
351.70-352.70. *Modern South Asia.* 6 units. *Embree*

Historiography and the Teaching of History

For Graduates

312. *Seminar in the Teaching of History in College.* Year course. 2 units. *Holley and Watson*
314. *Historical and Social Science Methodology.* Year course. 6 units. *Ginter*
320. *Historiography. Year course.* 4 units. *Parker*

History 314 or History 320 is required of all candidates for the degree of Doctor of Philosophy who are in residence as many as two years at Duke University.

Hospital Administration

Professor Frenzel, *Program Director* (234-B Baker House); Associate Professor Swanson; Assistant Professor Smith, *Coordinator of Graduate Studies* (234-B Baker House)

Graduate study leading toward preparation for a career of administration in hospitals and other health agencies is offered through a 24-month program leading to the M.H.A. degree. The program is composed of 36 graduate units, of which 18 are in Hospital Administration and 18 are in designated courses in Business Administration, Economics, Political Science, and Sociology. Included in the program is a 12-month administrative residency, a period of supervised administrative experience conducted under faculty supervision in hospitals and other health agencies located within commuting distance of the University campus. Admission to this program is limited to 16 students per year; selection is based on suitability for management of health agencies as well as on capability for graduate study. As there are requirements for participation in the program in Hospital Administration in addition to basic admission requirements of the Graduate School, interested individuals should obtain complete information on prerequisites and selection procedures from the Coordinator of Graduate Studies.

201. *History and Development of Hospitals and Other Health Agencies.* 3 units. *Smith*

203-204. *Principles of Organization and Management of Hospitals and Other Health Agencies.* 6 units. *Frenzel, Swanson, and Smith*

211-212. *Seminars in Health Administration.* 6 units. *Frenzel and Smith*

215. *Administrative Residency (1 calendar year).* 3 units. *Staff and Preceptors*

Mathematics

Professor Warner, *Chairman* (135C Physics Building); Associate Professor Smith, *Director of Graduate Studies* (135D Physics Building); Professors Carlitz, Dressel, Gallie, Murray, Roberts, Shoenfield, and Woodbury; Visiting Professors Davis and Hirschman; Associate Professors Bryson, Burdick, Burlak, Kitchen, Reynolds, Stackelberg, Weisfeld, and Williams; Assistant Professors Herr, Hodel, Moore, O'Fallon, O'Neill, Patrick, Scoville, and Wilkinson; Adjunct Professor Sewell

Graduate work in the Department of Mathematics is offered leading to the A.M. and Ph.D. degrees. The student, in his undergraduate work, must have had courses in differential and integral calculus, and at least 6 semester hours of other courses in mathematics on the junior or senior level.

The A.M. degree with a major in mathematics is awarded primarily on the basis of scholarship. Of the 24 units of course work required for this degree, 18 units must be taken in the Department of Mathematics.

The Ph.D. degree in mathematics is awarded upon the demonstration of ability and training in research. The original dissertation, therefore, is the most important of the formal requirements for the degree.

Since a reading knowledge of French, German, and Russian is highly desirable for the student of mathematics, he should satisfy the language requirements in two of these languages as early as possible.

204. *Geometry for Teachers.* 3 units. *Reynolds*

217-218. *Intermediate Analysis.* Prerequisite: Mathematics 63 for 217; and 217 for 218. 6 units. *O'Neill*

221-222. *Numerical Analysis.* 6 units. *Patrick and Davis*

227-228. *Theory of Numbers.* Prerequisite: Calculus. 6 units.** *Carlitz*

229-230. *Algebraic Numbers.* Prerequisite: theory of equations. 6 units.** *Carlitz*

234. *Sample Designs.* Prerequisite: Mathematics 133. 3 units.* *Bryson*

235-236. *Abstract Algebra.* Prerequisites: Mathematics 114, or consent of the instructor. 6 units. *Smith*

244. *Design of Experiments.* Prerequisite: Mathematics 233. 3 units.* *Burdick*

245-246. *Combinatorial Analysis.* Prerequisite: calculus. 6 units. *Carlitz*

247-248. *Arithmetic of Polynomials.* Prerequisite: Mathematics 236, or consent of the instructor. 6 units.** *Carlitz*

262. *Non-Parametric Statistics.* Prerequisite: Mathematics 244, or consent of the instructor. 3 units.* *Bryson*

271-272. *Introductory Topology.* Prerequisite: calculus. 6 units. *Hodel*

275-276. *Probability.* Prerequisite: Mathematics 135; or calculus and consent of the instructor. 6 units.* *Stackelberg*

283. *Applied Mathematical Statistics.* Prerequisite: Mathematics 64. 3 units. *Herr*

284. *Least Squares Analysis of Linear Models.* Prerequisites: Mathematics 136 or 283. 3 units. *Burdick*

285. *Applied Mathematical Methods I.* Prerequisite: Mathematics 63. 3 units. *Dressel*

286. *Applied Mathematical Methods II.* Prerequisite: Mathematics 63. 3 units. *Dressel*

287-288. *Foundations of Mathematics.* Prerequisite: Mathematics 114 or Philosophy 103, or consent of the instructor. (See also Philosophy 287-288.) 6 units.* *Shoenfield*

289. *Applications of Stochastic Processes I.* Prerequisites: Mathematics 135 and 140, or consent of the instructor. 3 units.* *Wilkinson*

290. *Applications of Stochastic Processes II.* Prerequisite: Mathematics 289, or consent of the instructor. 3 units.* *Wilkinson*

291-292. *Analysis I, II.* Prerequisite: Mathematics 218 or 140, or consent of the instructor. 6 units. *Moore*

293. *Multivariate Statistics.* Prerequisite: Mathematics 284, or consent of the instructor. 3 units.* *O'Fallon*

297-298. *Axiomatic Set Theory.* Prerequisite: consent of the instructor. 6 units.** *Shoenfield*

For Graduates

303-304. *Advanced Theory of Numbers.* Prerequisite: Mathematics 228, or consent of instructor. 6 units.** *Carlitz*

325-326. *Analysis III, IV.* Prerequisite: Mathematics 292 for 325; and 325 for 326. 6 units. *Scoville*

327-328. *Partial Differential Equations.* Prerequisite: Mathematics 291-292, or consent of the instructor. 6 units.* *Burlak*

329-330. *Theory of Distributions.* 6 units.* *Burlak*

333-334. *Analytic Theory of Numbers.* Prerequisite: Mathematics 291-292. 6 units.** *Carlitz*

335-336. *Topics in Algebra.* Prerequisite: Mathematics 236, or consent of the instructor. 6 units.* *Weisfeld*

343-344. *Ordinary Differential Equations.* Prerequisite: Mathematics 291-292. 6 units.* *Staff*

353-354. *Topics in Analysis.* Prerequisite: Mathematics 325, which may be taken concurrently. 6 units. *Hirschman*

371-372. *Dimension Theory.* Prerequisite: Mathematics 271-272. 6 units.* *Roberts*

383-384. *Lie Groups and Algebras.* Prerequisites: Mathematics 236, 271, and either Mathematics 218 or 291. 6 units.* *Shoenfield*

M385. *Mathematics of Physiological Systems.* Prerequisite: consent of the instructors. (See also Physiology M385.) 3 units. *Moore and Woodbury*

395-396. *Topological Algebra.* Prerequisites: Mathematics 236 and 292, or consent of the instructor. 6 units.* *Kitchen*

397-398. *Seminar in Algebra and Number Theory.* Prerequisite: consent of the instructor. 6 units. *Carlitz*

Microbiology and Immunology

Professor Joklik, *Chairman* (134 Medical Sciences I); Professor Day, *Director of Graduate Studies* (4546 Clinical Research I); Professors Amos, Beard, Conant, Larsh, Rundles, and Willett; Associate Professors Burns, Metzgar, Osterhout, Wheat, and Zmijewski; Assistant Professors Boyle, Buckley, and Nielsen

The Department offers A.M. (with or wthout thesis) and Ph.D. degrees in Microbiology with specialization possible in any of six areas: (1) Cell biology (mammalian, avian, and microbial), (2) Microbial physiology, (3) Immunochemistry, (4) Medical bacteriology and mycology, (5) Immunogenetics, and (6) General immunology. Undergraduate preparation in physical chemistry, biochemistry and calculus is urged for students entering areas 1-3 and for all others who will minor in biochemistry. A strong undergraduate preparation in medical or biological science is urged for students entering areas 4-6 who will minor in anatomy, pathology, zoology, or botany. A brochure may be requested from the Director of Graduate Studies, Box 3045, Duke Medical Center, which describes the degree program, the special requirements, and the fellowships available.

For Seniors and Graduates

201. *Advanced Microbiology.* Prerequisites: organic chemistry or biochemistry. (Fall semester) 3 units. *Wheat*

M211. *Hematology.* Prerequisites: courses in general zoology, general botany, histology, and comparative anatomy. 4 units. *Rundles*

M221. *Medical Microbiology.* Prerequisites: courses in general zoology, general botany, histology and comparative anatomy, general and organic chemistry. 4 units. *Amos, Beard, Conant, Day, Joklik, Willett; Burns, Metzgar, Osterhout, Wheat, Zmijewski; Boyle, Buckley, and Nielsen*

225. *Yeasts, Molds, and Actinomycetes.* 3 units. *Nielsen*

231. *Fundamentals of Immunology.* 2 units. *Boyle*

232. *Immunology of Cell Surfaces.* Prerequisite: Microbiology 231. 2 units. *Boyle*

271. *Cell Biology.* 3 units. *Joklik*

For Graduates

310. *Microbial Physiology.* Prerequisite: Biochemistry 201 or equivalent. 3 units. (Spring, alternate years) *Burns*

311. *Immunochemistry I. Antibodies.* Prerequisites: Fundamentals of Immunology or concent of instructor. 2 units. (Fall semester) *Day*

312. *Immunochemistry II. Antigens.* Prerequisite: Microbiology 311. 2 units. *Day*

313. *Immunohematology.* 2 units. *Zmijewski*

316. *Immunogenetics.* 2 units. *Amos*

324. *Research Seminar on Viruses.* 2 units per semester. *Beard*

325. *Medical Mycology.* Prerequisites: A.M. in Botany with major in mycology and M221. Course limited to four students each year. 4 units per semester. *Conant*

326-327. *Microbiology Seminar.* 2 units. *Staff*

328. *Seminar in Immunology.* 1 unit. Fall semester. *Staff*

Music

Associate Professor Kirkendale, *Director of Graduate Studies*; Professor Hamilton; Associate Professor Earls

The Department of Music offers graduate work leading to the A.M. degree, with concentration in either music history or composition. The prerequisite is normally the A.B. degree with a major in music and courses in music theory, music history, foreign language, and other subjects in the humanities. Facility in an instrument is also expected. In addition to meeting the admission requirements of the Graduate School (see pp. 43-46), applicants are asked to take two two-hour entrance examinations, prepared by the Department of Music. Arrangements may be made through the Director of Graduate Studies to write the examinations under proctorial supervision at the applicant's college or university. Students who wish to concentrate in composition submit with their application evidence of traditional contrapuntal skills in invention and fugue, and replaceable copies of two recent compositions. Reading knowledge of German and one of Italian, French, or Latin is required for the A.M. degree. Knowledge of one of these should be demonstrated prior to admission.

The course work required of students concentrating in music history includes Music 200; two electives chosen from Music 210, 220, and 230;

one elective chosen from Music 240, 250, and 260; and Music 330. A thesis written on a strictly limited topic in music history is required for completion of the degree.

Students concentrating in composition take Music 200; one elective chosen from Music 210, 220, and 230; two electives from Music 240, 250, and 260; and Music 320. For completion of the degree, the student concentrating in composition submits an extended musical work showing skill and originality in the use of compositional techniques, and subject to the approval of the examining committee.

All students choose six units of a minor from European history, literature, or art history and three additional units from this group or from music. The content of the music courses varies from year to year. In most cases a course deals with a specialized topic within the area defined by the course title.

For Seniors and Graduates

200. *Introduction to Graduate Study.* Bibliography, Historiography, Methods of Musicology, Editorial Technique, etc. 3 units. *Staff*

210. *Studies in Music of the Middle Ages.* 3 units. *Staff*

220. *Studies in Music of the Renaissance.* 3 units. *Staff*

230. *Studies in Music of the Baroque Period.* 3 units. *Staff*

240. *Studies in Music from the Mid-Eighteenth Century to the Death of Beethoven.* 3 units. *Staff*

250. *Studies in Music of the Nineteenth Century after Beethoven.* 3 units. *Staff*

260. *Studies in Music of the Twentieth Century.* 3 units. *Staff*

319. *Studies in Contemporary Analysis.* 3 units. *Staff*

320. *Seminar in Composition.* 3 units. *Staff*

330, 331. *Special Studies in Music History:* Paleographical Exercises, Independent Readings, Term Papers, etc. 3 or 6 units. *Staff*

Pathology

Professor Kinney, *Chairman* (301B Medical School); Professor Trump, *Director of Graduate Studies* (263 Medical School); Professors Fetter, Hackel, Vazquez, and Vogel; Associate Professors Elchlepp, Klintworth, Rowlands, Sommer, and Wittels; Assistant Professors Burkholder and Sage

The Department of Pathology offers graduate work leading to the Ph.D. degree with areas of specialization such as subcellular and molecular pathology, immunopathology, and neuropathology. Course work is designed to give a broad background in classical and modern pathology with emphasis on the application of biophysical, biomathematical and biochemical approaches. Students will be required to take such courses as

are necessary to obtain this foundation. In general, students will be required to take course work that is best adapted to areas of specialty and research. Further information including brochures giving details about the departmental facilities, staff, trainee stipends and the M.D.-Ph.D. program are available from the Director of Graduate Studies.

M350. *General Pathology.* Prerequisite: permission of instructor. Lecture and conferences. M351 must be taken concurrently. 4 units. *Kinney and Staff*

M351. *Correlative Pathology.* Prerequisite or concurrent: Pathology 350. M350 must be taken concurrently. 4 units. *Kinney and Staff*

M352. *Basic Problems in Chemical Pathology.* Prerequisite: permission of instructor. 2 units.* *Wittels*

M353. *Advanced Neuropathology.* Prerequisite: permission of instructor. 2 units. *Vogel*

M354. *Immunopathology.* Prerequisite: permission of instructor. 2 units. *Vazquez and Staff*

M355, M356. *Seminar in Pathology.* 1 units each semester. *Members of Staff*

M357. *Research in Pathology. Members of Staff*

M358. *Cellular and Subcellular Pathology.* Prerequisite: permission of instructor. 2 units. *Trump and Sommer*

359. *Applied Instrumentation.* Prerequisite: concurrent or previous enrollment in M358. 2 units.** *Trump and Staff*

M360. *Enzymatic and Determinative Histochemistry.* 2 units. *Trump and Sommer*

M361, M362. *Advanced General Pathology.* Prerequisite: M350, and permission of instructor. 6 units.* *Rowlands*

M363. *Seminar in Electron Microscopy.* 1 unit. *Trump*

M364. *Systemic Pathology.* Prerequisites: Pathology 350 and 351. 6 units. *Hackel*

Philosophy

Professor Welsh, *Chairman* (203D West Duke Building); Professor Peach, *Director of Graduate Studies* (201B West Duke Building); Professors Baylis, Clark, Negley, and Wilson; Assistant Professors Aquila and Mahoney

The Department of Philosophy offers graduate work leading to the A.M. and Ph.D. degrees. Tutorial work complements formal instruction. Students may specialize in any of the following fields: the history of philosophy; logic; philosophy of science; epistemology; metaphysics; philosophical analysis; ethics; aesthetics; political philosophy and philosophy of law.

Individual programs of study are developed for each student. The

following requirements, however, are fundamental: (1) In February of their first year new graduate students are required to take two qualifying examinations to determine the student's fitness to continue in graduate work. One examination is in the history of philosophy, ancient and modern; one is on a central philosophical topic, treated systematically. (2) The preliminary examinations for the Ph.D., which may be taken only after a student has met the language requirements for that degree, should be taken during the first year of study beyond the A.M. degree or at the end of the second year. In these examinations students are expected to combine historical knowledge with critical understanding.

Work in a minor field outside of the Department, but not necessarily confined to any one department, must include six units for the A.M. or the Ph.D. and may include more as a student's program requires or permits.

For Seniors and Graduates

202. *Aesthetics: The Philosophy of Criticism.* 3 units. *Welsh*

203. *Contemporary Ethical Theories.* 3 units. *Baylis*

205. *Philosophy of History.* 3 units. *Negley*

208. *Political Values.* 3 units. *Negley*

211. *Plato.* 3 units. *Mahoney*

217. *Aristotle.* 3 units. *Mahoney*

218. *Medieval Philosophy.* 3 units. *Mahoney*

219. *Kant.* 3 units.* *Negley*

225. *British Empiricism. Peach*

227. *Continental Rationalism.* 3 units.** *Peach*

228. *Recent and Contemporary Philosophy.* 3 units. *Welsh*

229. *American Pragmatism.* 3 units.* *Welsh*

230. *The Meaning of Religious Language.* Prerequisite: Contemporary Theology 232-233, or consent of instructor. 3 units. *Poteat*

231. *Classical German Philosophy.* 3 units. *Aquila*

233. *Introduction to the Philosophy of Science.* 3 units. *Kalke*

234. *Philosophy of Science.* Prerequisite: previous work in the philosophy of science or consent of the instructor. 3 units. *Kalke*

241. *Logic.* 3 units.* *Clark and Wilson*

246. *General Semantics and Theory of Language.* Prerequisite: Philosophy 103 or the equivalent. 3 units.* *Wilson*

247. *Philosophical Cosmology.* 3 units. *Wilson*

250. *Philosophical Analysis.* 3 units. *Baylis and Clark*

251. *Epistemology.* 3 units.* *Baylis*

252. *Metaphysics.* 3 units. *Baylis*

253. *Philosophy of Mind.* 3 units.* *Clark*

287-288. *Foundations of Mathematics.* Prerequisite: Mathematics 53 or consent of instructor. 6 units. (Also listed as Mathematics 287-288. *Shoenfield*

291, 292. *Critical Philosophy.* 3 units each. Enrollment only by permission of the Department. 291 is ordinarily prerequisite for 292. *All Members of the Graduate Staff*

For Graduates

331, 332. *Seminar in Special Fields of Philosophy.* 3 units. *All Members of the Graduate Staff*

Physics

Professor Fairbank, *Chairman* (119 Physics Building); Associate Professor Evans, *Director of Graduate Studies* (213 Physics Building); Professors Biedenharn, Fowler, Gordy, Greuling, Lewis, Meyer, and Newson; Adjunct Professor Robl; Associate Professors Bilpuch, Roberson, Robinson, and Walter; Assistant Professors Beres, Binkley, Carpenter, R. Cook, Fortney, Guyer, Han, Rose, and Sykes; Instructor C. Cook

The Department of Physics offers graduate work leading to the A.M. and Ph.D. degrees. Course work is designed to give a broad basic foundation in classical and modern physics. All graduate students will be expected to acquire a thorough knowledge of the various branches of classical physics and some familiarity with modern physics and with basic laboratory skills. They will be required to take such course work in the 200-number courses as may be necessary to obtain this foundation.

The student will be required to take such course work as will best be adapted to the kind of work he will subsequently specialize in and to the kind of research he will undertake. The choice of minor will be similarly determined.

A reading knowledge of two languages, usually chosen from French, German, and Russian, is required for the Ph.D. degree. The student is urged to satisfy these requirements as early as possible.

For Seniors and Graduates

209. *Introduction to Solid State Physics.* 3 units. *Deis*

215. *Introduction to Quantum Mechanics.* Prerequisites: Physics 162, 182 or equivalents; Math. 285-286 may be taken concurrently. 3 units. *Evans*

217-218. *Advanced Physics Laboratory.* 2-6 units. *Meyer*

220. *Advanced Electrtonics.* 3 or 4 units. *Roberson*

221-222. *Theoretical Physics.* Prerequisite: Mathematics 285-286 or equivalent to be taken at least concurrently. 6 units. *R. Cook*

223-224. *Electricity and Magnetism.* 6 units. *Carpenter*

For Graduates

302. *Advanced Mechanics.* 3 units. *Fortney*

303, 304. *Thermodynamics, Statistical Mechanics.* 6 units. *Sykes*

305. *Introduction to Nuclear Physics.* 3 units. *Walter*

306. *Low Temperature Physics.* Prerequisite: Physics 303. 3 units.* *Fairbank*

308. *Introduction to High Energy Physics.* 3 units. *Fowler*

309. *Solid State.* Prerequisite: Physics 303. 3 units. *Sykes*

310. *Advanced Solid State Physics.* Prerequisite: Physics 316. 3 units.* *Guyer*

316. *Principles of Quantum Theory.* Prerequisite: Physics 202. 3 units. *C. Cook*

317. *Intermediate Quantum Theory.* Prerequisite: Physics 316. 3 units. *Biedenharn*

318-319. *Electromagnetic Field Theory.* Prerequisite: Physics 223. 3 units. *Greuling*

330. *Nuclear Structure Theory.* Prerequisites: Physics 305 and 316. 3 units. *Beres*

331. *Microwave Radiation.* 3 units.* *Gordy*

335. *Microwave Spectroscopy.* 3 units.* *Gordy*

341. *Advanced Topics in Quantum Theory.* Prerequisite: Physics 317. 3 units.* *Han*

342. *Theory of Elementary Particles.* Prerequisite: Physics 316. 3 units.* *Evans*

343. *Nuclear Physics.* Prerequisite: Physics 215. 3 units.* Newson

344. *Advanced Nuclear Physics.* Prerequisite: Physics 343. 3 units.* *Biedenharn*

345. *High Energy Physics.* 3 units. *Binkley*

346. *Topics in Theoretical Physics.* Prerequisite: Physics 316, 317. 3 units.*

351-352. *Seminar.* 2-4 units. *Members of the Graduate Staff*

Physiology and Pharmacology

Professor Tosteson, *Chairman* (388 Medical Sciences I); Professor Blum, *Director of Graduate Studies* (340 Medical Sciences I); Professors F. Bernheim, R. Brauer, R. Bressler, E. A. Johnson, Moore, and Renkin; Associate Professors Hochstein, Jöbsis, Lack, Long, McManus, Narahashi, Ottolenghi, Padilla, Salzano, Somjen, and Wolbarsht; Assistant Professors Anderson, Andreoli, Armstrong, Brendel, Fellows, Lauf, Lieberman, Mendell, Mills, Schanberg, and Wachtel

In the Department of Physiology and Pharmacology graduate work is offered leading to the A.M. and Ph.D. degrees. Before undertaking graduate work in physiology or pharmacology a student should have a strong background in basic science including course work in mathematics, chemistry, physics and biology. Students are accepted for graduate work

who have undergraduate majors in any of the following areas: biology, chemistry, physics, engineering. A brochure is available from the department which describes the program of study, financial assistance, facilities, and the research activities of the staff.

M200. *Introductory Physiology.* Fall term. 6 units. *All Members of the Graduate Staff*

M201. *Pharmacology: Mode of Action of Drugs.* Prerequisite: M200 or equivalent. 4 units. *All Members of the Graduate Staff*

M258. *Environmental and Underwater Physiology and Pharmacology.* 4 units. *Brauer and Staff*

M279. *Student Tutorial in Physiology and Pharmacology.* 2 units. *All Members of the Graduate Staff*

M280. *Student Seminar in Physiology and Pharmacology.* 2 units. *All Members of the Graduate Staff*

M372. *Research. All Members of the Graduate Staff*

M383. *Physiological Instrumentation.* 3 units. *Moore and Staff*

M384. *Analysis of Physiological Systems.* 3 units. *Moore, Blum, and Staff*

M387. *Cardiovascular and Respiratory Physiology & Pharmacology I.* 2 units. *Johnson and Staff*

M389. *Cardiovascular and Respiratory Physiology and Pharmacology II.* 2 units. *Salzano and Staff*

M391. *Neurophysiology and Neuropharmacology I.* 3 units. *Narahashi and Staff*

M393. *Neurophysiology and Neuropharmacology II.* 3 units. *Somjen and Staff*

M397. *Cellular and Biochemical Pharmacology I.* 2 units. *Ottolenghi and Staff*

M398. *Cellular and Biochemical Pharmacology II.* 2 units. *Ottolenghi and Staff*

M401. *Metabolic and Developmental Physiology and Pharmacology.* 3 units. *Blum and Staff*

M403. *Endocrine and Reproductive Physiology and Pharmacology.* 3 units. *Fellows and Staff*

M405. *Contractile Processes in Physiology and Pharmacology.* 3 units. *Johnson, Jöbsis, and Staff*

M407. *Membrane Transport Processes in Physiology and Pharmacology I.* 2 units. *Tosteson and Staff*

M409. *Membrane Transport Processes in Physiology and Pharmacology II.* 2 units. *Tosteson and Staff*

Political Science

Professor Hallowell, *Chairman* (307 Library); Professor Ball, *Director of Graduate Studies* (315 Library); Professors Braibanti, Cole, Hall,

Kulski, Leach, Proctor, and Thomas; Associate Professors Cook and Kornberg; Assistant Professor Braithwaite; Adjunct Professor Grzybowski

The Department of Political Science offers graduate work leading to the A.M. and Ph.D. degrees. Before being admitted to candidacy for the Ph.D. degree, an applicant is normally expected to have qualified for the A.M. degree.

Instruction is designed to prepare the student for teaching and research, for government service, and for other work related to public affairs. Before undertaking graduate study in political science, a student is ordinarily expected to have completed at least 12 semester hours of course work in political science, including some work in American government.

Fields of political science in which instruction is at present offered for candidates for the degree of Doctor of Philosophy are the following: American government and constitutional law; comparative government and politics (with special reference to Western Europe, Southern Asia, Latin America, Africa, the Soviet Union or the Commonwealth); political theory; American state and local government; international law and relations; public administration; political parties and voting behavior. Candidates for the degree of Doctor of Philosophy in Political Science must elect five fields including comparative government and political theory; at least one of the five fields must be taken in a department other than Political Science.

For Seniors and Graduates

207. *American Constitutional Law and Theory.* 3 units.

208. *American Constitutional Law and Current National Problems.* 3 units.

209. *Problems in State Government in the United States.* 3 units. *Leach*

214. *Comparative Administrative Law.* 3 units. *Grzybowski*

220. *Problems in International Politics.* 3 units. *Kulski*

221. *International Public Organization.* 3 units. *Ball*

222. *Empirical Theory and Methodology.* 3 units. *Braithwaite*

223. *Political Philosophy from Plato to Machiavelli.* 3 units. *Hallowell*

224. *Modern Political Theory.* 3 units. *Hallowell*

225. *Comparative Government and Politics—Western Europe.* 3 units. *Cole*

227-228. *International Law.* 6 units. *Grzybowski*

229. *Recent and Contemporary Political Theory.* 3 units. *Hallowell*

230. *American National Government.* 3 units. *Thomas*

231. *American Political Theory.* 3 units. *Cook*

235. *The British Commonwealth.* 3 units. *Cole*

241. *Public Administrative Organization and Management.* 3 units. *Hall*

242. *National Administration.* 3 units. *Hall*

243. *Administrative and Organizational Theory and Behavior.* 3 units. *Thomas*

244. *Administrative Law and Process.* 3 units. *Hall*

246. *Public Administration and Public Policy.* 3 units. *Thomas*

249. *Comparative Political Analysis and Political Development.* 3 units. *Braibanti*

250. *Comparative Government and Politics—Southern Asia I.* 3 units. *Braibanti*

251. *Comparative Government and Politics—Southern Asia II.* 3 units. *Braibanti*

253. *Comparative Government and Politics: Latin America.* 3 units. *Ball*

275. *The National Party System.* 3 units. *Kornberg*

276. *Comparative State Parties and Politics.* 3 units.

277. *Comparative Party Politics.* 3 units. *Kornberg*

280. *Comparative Government and Politics—Sub-Saharan Africa.* 3 units. *Proctor*

285. *The Judicial Process.* Prerequisites: Political Science 127, 207, or their equivalents. Not open to students who have completed Political Science 128. 3 units.

291. *Problems of Urban Government.* 3 units. *Leach*

293. *Federalism.* 3 units. *Leach*

For Graduates

301-302. *Departmental Graduate Seminar. All Members of the Graduate Staff and Visiting Lecturers*

310. *Seminar in State and Local Government.* 3 units. *Leach*

312. *Seminar in Constitutional Law.* 3 units.

321. *Seminar in Political Theory.* 3 units. *Hallowell*

325. *Seminar in Comparative Government and Politics.* 3 units. *Cole*

328. *Seminar in International Law.* 3 units.

330. *Seminar in Comparative Government and Politics—Southern Asia.* 3 units. *Braibanti*

341. *Seminar in Public Administration.* Open to students who have taken course 141 or 243. 3 units. *Thomas*

342. *Seminar in American National Government and Politics.* 3 units. *Thomas*

343. *Seminar in the Policy Process.* 3 units. *Thomas*

360. *Seminar in Government and Politics in the Soviet Union.* 3 units. *Kulski*

361. *Seminar in Foreign Relations of the Soviet Union.* 3 units. *Kulski*

376. *Seminar in Political Behavior.* 3 units.

380. *Seminar in African Government and Politics.* 3 units. *Proctor*

401. *Seminar in the British Commonwealth.* 3 units. *Cole, Preston, Spengler, and Braibanti*

410. *Seminar in the Government, History, and Social Structure of India and Pakistan.* 3 units.* *Braibanti and Associates*

Related Course Work in the School of Law

There may be graduate credit for course work completed in the Duke University School of Law, under regulations referred to on page 60 of this *Bulletin.*

Psychology

Professor Alexander, *Chairman* (224 Psychology-Sociology Building); Associate Professor Lockhead, *Director of Graduate Studies* (242 Psychology-Sociology Building); Professors Brehm, Carson, Dai, Diamond, Guttman, Jones and Wallach; Associate Professors Altrocchi, Borstelmann, R. Erickson, Lakin, Schiffman, and Wing; Associate Research Professor Gaffron; Assistant Professors Costanzo, C. Erickson, Kramer, Kremen, Linder, Staddon, and Wortman; Lecturers Clifford, E. Crovitz, H. Crovitz, Eisdorfer, Feather, Gehman, Huse, Kinsbourne, Krugman, Obrist, Peele, Shows, Somjen, Thompson, and Wolbarsht

The Department offers work leading to the A.M. and Ph.D. degrees. For the Ph.D. degree the areas of concentration are: theoretical experimental psychology, including physiological and comparative psychology; social psychology; and personality-clinical psychology. All fields of specialization presuppose thorough preparation in the general methods, data, and theories of psychology. Programs of study are typically arranged to provide this common background in the first year or two, with increasing specialization in course work and research in subsequent years. Early in the second year of residence, the Ph.D. student is expected to have planned his further program of specialized studies; by the end of the second year, when the preliminary examination is normally taken, the doctoral dissertation plan should be formulated. An original dissertation demonstrating independent research competence and scholarship is the most important formal requirement for the Ph.D. degree.

Students specializing in clinical psychology undertake field work in a variety of settings, and an integral part of this program is a one-year internship in an approved and appropriate institution. Clinical internship is arranged for the third year of study or a later year, depending on the student's progress and needs.

Related work in a variety of fields is available. The areas most relevant to graduate work in psychology are the biological sciences (zoology, neuroanatomy, physiology), mathematics and statistics, sociology and anthropology, and philosophy of science. Basic preparation in

statistics and quantitative methods is normally obtained in the Department of Mathematics.

Further details concerning the program of studies in psychology may be obtained from the Director of Graduate Studies in Psychology.

203. *Sensation and Perception.* 3 units. *Lockhead*
204. *Comparative Psychology.* 3 units. *C. Erickson*
205. *Interpersonal Processes.* Prerequisite: Psychology 101. *Linder*
210. *Cognition and Higher Mental Processes.* 3 units. *Wortman*
211. *The Problem Child.* 3 units. *Gehman*
213. *Conditioning and Learning.* 3 units. *Staff*
214. *Behavior and Learning Theory.* 3 units. *Guttman*
215. *Developmental Psychology.* 3 units. *Borstelmann*
216. *Biological Psychology.* 3 units. *Diamond*
217. *Research Methods in Social Psychology.* 3 units. *Brehm and Linder*
218. *Social Psychology.* 3 units. *Jones*
220. *Physiological Bases of Behavior.* 3 units. *C. Erickson*
234. *Seminar in Personality.* 3 units. *Wallach*
236. *Theoretical Psychology.* 3 units. *Guttman*
237. *Functional Neurophysiology.* 3 units. *R. Erickson*
238. *The Electroencephalogram and Psychological Function.* 3 units. *Obrist*
239. *Behavioral Correlates of Brain Damage in Man.* 3 units. *Thompson*
245. *Personality Theory I.* 3 units. *Alexander or Kremen*
246. *Personality Theory II.* 3 units. *Alexander or Kremen or Schiffman*
247-248. *Personality Assessment.* 3 units each semester. *Alexander or Kremen*
249. *Introduction to Exceptional Children.* 3 units.
253, 254. *Personality Development.* 3 units each semester. *Eisdorfer and Borstelmann*
271- 1-4. *Seminar in Selected Problems.* 3 units each.
273. *Principles of Psychological Measurement.* Prerequisite: Mathematics 232 or equivalent. 3 units. *Schiffman*
282. *Introduction to Methods in Psychotherapy.* 3 units. *Lakin and Carson*
292. *The History of Psychology.* 3 units.*

For Graduates

305. *Psychopathology.* 3 units. *Feather*
306. *Seminar in Developmental Psychology.* 3 units.*
309. *Seminar in Learning.* 3 units. *Staff*
310. *Seminar in Perception.* 3 units. *Lockhead*
311. *Seminar in Instrumental Behavior.* 3 units. *Guttman*

313. *Seminar on Concept of the Reflex.* Permission of instructors. 3 units. *Diamond and Guttman*

316. *Seminar in Social Psychology.* 3 units. *Jones*

317. *Seminar in Social Behavior.* 3 units. *Linder*

318. *Seminar in Social Influence.* 3 units. *Brehm*

320. *Seminar in Community Mental Health.* 3 units. *Altrocchi*

324. *Seminar: Behavioral Studies of the Brain.* 3 units. *Diamond and R. Erickson*

335-336. *Clinical Psychology Practicum.* Prerequisite: Psychology 245, 246, 247, and 248. 1 to 6 units each of two semesters. *Staff*

337. *Seminar in Sensory Discrimination.* A study of the neural bases of discrimination. 3 units. *R. Erickson*

341. *Principles of Psychotherapy, I.* Prerequisite: Psychology 282. 3 units. *Dai*

342. *Principles of Psychotherapy, II.* Prerequisite: Psychology 341. 3 units. *Dai*

343, 344. *Advanced Seminar in Clinical Psychology.* 1 to 3 units each semester. *Staff*

371. *Pre-School Behavior Problems.* 3 units.

Religion

Professor Beach, *Director of Graduate Studies* (209 Divinity School); Professors Baker, Cushman, Davies, Henry, Herzog, Hillerbrand, Lacy, Langford, Petry, Poteat, Price, Stinespring, Young; Associate Professors Clark, Grislis, Osborn, Robinson, Smith, Sullivan, Wintermute; Assistant Professors Parton and Tucker

The Department of Religion offers graduate work leading to the A.M. and Ph.D. degrees. Students may major in one of three fields: (1) Biblical Studies; (2) Historical Studies; and (3) Systematic and Contemporary Studies. They will be expected to take such courses in one or both of the other fields as will conduce to an adequate understanding of their chosen fields of specialization.

In addition to course work in these major fields, students will take such other courses in cognate fields as will contribute to the enrichment of their major studies.

This minor requirement may be fulfilled either by work in a cognate department, such as Classical Studies, History, or Political Science, or by work in a cognate field within the Department of Religion other than the field of major concentration.

The program of doctoral studies presumes a grounding in religion such as is normally derived from the course content of theoretical subjects of a seminary curriculum. Candidates for admission to the doctoral program are favored, therefore, who hold a B.D. (or equivalent) degree from an

accredited seminary or who have had at least two years of seminary study beyond the B.A. degree. Students applying for graduate work in religion directly from an undergraduate program should have had a strong undergraduate major in religion, and will be accepted for the Ph.D. program only on the condition of satisfactory completion of the A.M. degree with the department.

Candidates for the Ph.D. degree must complete the language requirements not later than the beginning of the second year of residence.

Field I. Biblical Studies

201-202. *First Hebrew.* 6 units. *Stinespring*
207. *Second Hebrew.* 3 units. *Staff*
208. *Second Hebrew.* 3 units. *Staff*
209. *Biblical Theology.* 3 units. *Tucker*
225. *Living Issues in New Testament Theology.* 3 units. *Smith*
226. *Exegesis of the Greek New Testament I.* 3 units. *Price or Smith*
227. *Exegesis of the Greek New Testament II.* 3 units. *Smith*
228. *The Theology of the Gospel and Epistles of John.* 3 units. *Price*
258. *Coptic.* Prerequisite: at least one year of Greek. 3 units. *Wintermute*
302. *Studies in the Intertestamental Literature.* Prerequisite: Permission of the instructor. 3 units.
304. *Aramaic.* 3 units. *Stinespring*
305. *Third Hebrew.* 3 units. *Stinespring or Davies*
306. *Language and Literature of the Dead Sea Scrolls.* Prerequisite: a knowledge of Hebrew. 3 units. *Wintermute*
307. *Syriac.* 3 units. *Stinespring*
309. *History of the Ancient Near East.* 3 units. *Stinespring*
310. *Old Testament Prophecy.* 3 units. *Tucker or Stinespring*
312. *Pauline Theology.* 3 units. *Davies*
314. *Judaism and Christianity in the New Testament.* 3 units. *Davies*
319. *The Gospel According to St. Matthew in Recent Research.* 3 units. *Davies*
340-341. *Seminar in the New Testament.* 2 or 3 units. *Price or Smith*
345. *The Epistle to the Hebrews in Recent Research.* 3 units. *Davies*
350-351. *Old Testament Seminar.* 3 units. *Tucker*

Field II. Historical Studies

234. *The Theology of St. Thomas Aquinas.* 3 units. *Grislis*
240. *The Theology of Richard Hooker.* 3 units. *Grislis*
250. *The Reformation of the 16th Century.* 3 units. *Hillerbrand*
251. *The Age of the Counter-Reformation.* 3 units. *Hillerbrand*
252. *Pietism, Deism, and Rationalism.* 3 units. *Hillerbrand*

260. *Seminar: Wesley Studies.* 3 units. *Baker*
279. *Religions of East Asia.* 3 units. *Sullivan*
280. *The History of Religions.* 3 units. *Sullivan or Partin*
285. *Origins of Indian Civilization.* 3 units. *Sullivan*
296. *Religion on the American Frontier.* 3 units. *Henry*
308. *Greek Patristic Texts.* 3 units. *Young*
322. *Nineteenth-Century European Theology.* 3 units. *Herzog*
331. *The Social Message of the Early and Medieval Church.* 3 units. *Petry*
332. *The Medieval Church.* 3 units. *Petry*
334. *Church Reformers and Christian Unity.* 3 units. *Petry*
336. *Christian Mysticism in the Middle Ages.* 3 units. *Petry*
337. *The Theology of Martin Luther.* 3 units. *Hillerbrand*
338. *The Theology of John Calvin.* 3 units. *Grislis*
339. *Left-Wing Movements of the Reformation.* 3 units. *Hillerbrand*
362. *The Theology of St. Augustine.* 3 units. *Grislis*
387. *Christian Ethics and Social Philosophy.* 3 units. *Lacy*
391. *Historical Types of Christian Ethics I.* 3 units. *Beach*
392. *Historical Types of Christian Ethics II.* Prerequisite: C.E. 391. 3 units. *Beach*
395. *Christian Thought in Colonial America.* 3 units. *Henry*
396. *Liberal Traditions in American Theology.* 3 units. *Henry*

Field III. Systematic and Contemporary Studies

210. *Contemporary British Theology.* 3 units. *Langford*
230. *The Meaning of Religious Language.* 3 units. *Poteat*
231. *Seminar in Christianity and Contemporary Thought.* 3 units. *Poteat*
292. *Christian Ethics and International Relations.* 3 units. *Lacy*
293. *Sociological Analysis of Religion.* 3 units. *Clark*
294. *Institutional Analysis of Religious Bodies.* 3 units. *Clark*
300. *Systematic Theology.* 3 units. *Herzog*
303. *The New Hermeneutic and the Concept of History.* 3 units. *Herzog*
320. *Hegel and Schleiermacher.* 3 units. *Herzog*
325. *Philosophical Theology I.* 3 units. *Robinson or Cushman*
326. *Philosophical Theology II.* 3 units. *Robinson or Cushman*
328. *Twentieth-Century European Theology.* 3 units. *Herzog*
333. *Seminar: Marxist Ideology and Christian Faith.* 3 units. *Lacy*
380. *Existentialist Thought.* 3 units. *Poteat*
381. *Seminar: Phenomenology and Religion.* Permission of the instructor. 3 units. *Poteat*
385. *Religion in American Literature.* 3 units. *Henry*
386. *Christianity in Dialogue with Other Faiths.* 3 units. *Lacy*
389. *Christian Ethics and Contemporary Culture.* 3 units. *Beach*

390. *Current Problems in Christian Ethical Theory.* 3 units. *Beach*
394. *Christianity and the State.* 3 units. *Beach*
397. *Contemporary American Theology.* 3 units. *Henry*
398. *Colloquium on the College and University Teaching of Religion. Beach and Staff*

Romance Languages

Professor Fein, *Chairman* (205 Foreign Lang.); Associate Professor Cordle, *Director of Graduate Studies* (303 Foreign Lang.); Professors Cherpack, Davis, Dow, Fowlie, Grant, Predmore, Tétel, and Wardropper; Associate Professors Hull and Vincent

The Department of Romance Languages offers graduate work leading to the A.M. and Ph.D. degrees. In order to undertake graduate study in this Department, the student should normally have credit for four years of college courses in the chosen language, or 18 semester hours beyond the conventional two units offered at entrance to college. In addition to this minimum requirement, the student should have had one semester of review in composition and grammar.

It is recommended that candidates for the A.M. and Ph.D. degrees take a second Romance language as the minor subject.

French

209. *Advanced Composition and Syntax.* 3 units. *Hull*
210. *French Phonetics.* 3 units. *Hull*
213, 214. *French Literature of the Seventeenth Century.* 6 units. *Cherpack*
217. *Mallarmé and Rimbaud.* 3 units. *Fowlie*
219. *Old French Literature.* 3 units. *Vincent*
221, 222. *The Nineteenth-Century French Novel.* 6 units. *Grant*
223. *French Literary Criticism.* 3 units. *Fowlie*
224. *History of the French Language.* 3 units. *Hull*
225, 226. *From Renaissance to Baroque in French Literature of the Sixteenth Century.* 6 units. *Tétel*
228. *French Poetry of the Twentieth Century.* 3 units.** *Fowlie*
233. *Contemporary French Theater.* 3 units.** *Fowlie*
234. *Proust.* 3 units. *Fowlie*
236. *Baudelaire.* 3 units. *Fowlie*
241, 242. *French Literature and Thought in the Age of Enlightenment.* 6 units. *Cherpack*
245, 246. *French Literature of the Twentieth Century.* 6 units.** *Cordle*

For Graduates

311, 312. *French Seminar.* 3 units each semester. *Fowlie, Cordle, Grant, Tétel, and Vincent*

—. *Graduate Reading Course.*

Italian

For Seniors and Graduates

288. *The Renaissance.* 3 units. *Tétel*

Spanish

For Seniors and Graduates

251. *The Origins of the Spanish Novel.* 3 units.** *Wardropper*

252. *Spanish Lyric Poetry Before 1700.* 3 units.** *Wardropper*

253. *The Origins of the Spanish Theater.* 3 units.** *Wardropper*

255, 256. *Modern and Contemporary Latin-American Literature.* 6 units. *Fein*

257. *Old Spanish.* 3 units. *Davis*

259. *Spanish Phonetics.* 3 units. *Predmore*

260. *Advanced Composition and Syntax.* 3 units. *Davis*

261. *Nineteenth-Century Novel.* 3 units. *Davis*

262. *Romanticism in Spain.* 3 units.**

265. *Golden Age Literature: Cervantes.* 3 units. *Predmore and Wardropper*

266. *Golden Age Literature: The Drama.* 3 units.** *Wardropper*

275, 276. *Contemporary Spanish Literature.* 6 units. *Predmore*

For Graduates

321, 322. *Hispanic Seminar.* 3 units each semester. *Davis, Fein, Predmore, and Wardropper*

Romance Languages

211. *Approaches to Romance Literature.* 3 units. *Cherpack*

218. *The Teaching of Romance Languages.* 3 units. *Dow*

Slavic Languages and Literatures

Associate Professor Krynski, *Chairman;* Associate Professor Jezierski

No graduate degree is presently offered in Slavic Languages and Literatures. The following courses may serve in the minor programs of students in other departments.

201, 202. *The Novelists of Nineteenth-Century Russia.* 6 units. *Krynski*

207. *Soviet Literature and Culture.* 3 units. *Jezierski*

212. *Pushkin.* Prerequisite: Russian 101, or the instructor's consent. Readings in English or Russian. 3 units. *Jezierski*

215, 216. *Advanced Composition and Syntax.* Prerequisites: Russian 91, 92 or instructor's permission. 6 units. *M. Pavlov*

224. *The Russian Short Story—Eighteenth Century to the Present.* 3 units.** *Jezierski*

225. *Tolstoy.* 3 units. *Jezierski*

227. *Gogol.* 3 units.** *Jezierski*

230. *Chekhov.* 3 units. *Krynski*

232. *Fyodor Dostoevsky.* 3 units.** *Krynski*

233. *Ivan Turgenev.* 3 units. *Krynski*

Slavic 204. *Polish Literature of the Twentieth Century.* 3 units. *Krynski*

Slavic 205. *The Structure of Polish in Relation to Russian.* 3 units. *Krynski*

Slavic 206. *Readings in Contemporary Polish Prose in the Original.* 3 units.** *Krynski*

Slavic 236. *Russian and Polish Romanticism.* 3 units.** *Krynski*

Sociology and Anthropology

Professor Tiryakian, *Chairman* (268 Sociology-Psychology Building); Professor Smith, *Director of Graduate Studies* (332 Sociology-Psychology Building); Professors Back, Kerckhoff, La Barre, McKinney, Maddox, Myers, Roy, and Thompson; Associate Professors Apte, R. Fox, McCormack, Palmore, Preiss; Assistant Professors Bowers, Crocker, J. Fox, Hartford, Prost, Wilson, Ullrich

The Department offers graduate work leading to the A.M. and Ph.D. degrees in Sociology and in Anthropology. Before undertaking advanced work in this department, a student must have completed a minimum of twelve semester hours of approved preliminary courses in his chosen discipline, and twelve additional semester hours in the field or in related work. Applicants for admission should submit scores on the Graduate Record Examination, especially the Aptitude Test.

Before being admitted to candidacy for the Ph.D. degree in Sociology, an applicant is normally expected to have qualified for the A.M. degree. Candidates for the Ph.D. degree are expected to demonstrate in qualifying and preliminary examinations a broad background in the various aspects of sociology—substantive, theoretical, and empirical. The program of each candidate is determined by a committee which reviews his previous work and sets the specific requirements to be met. These requirements will include work in related fields such as anthropology,

economics, mathematics, philosophy, political science, or psychology. Emphasis is placed on the completion of the dissertation, directed by a member of the staff, demonstrating competence and independence in the investigation of an original and significant problem.

Before being admitted to candidacy for the Ph.D. degree in Anthropology, an applicant is normally expected to have qualified for the A.M. degree. Candidates for the Ph.D. degree must show evidence by preliminary or qualifying examination of a command of a major field within the discipline. The Department recognizes the trend in modern anthropology toward interdisciplinary research and part of the Anthropology course requirements may be replaced by advanced work in anatomy, economics, sociology, zoology, and other disciplines relevant to the student's program.

Further details of these programs, the departmental facilities, the staff, and various stipends available are described in a brochure which may be obtained from either the Director of Graduate Studies for Sociology or the Director of Graduate Studies for Anthropology, Department of Sociology and Anthropology.

Sociology

For Seniors and Graduates

241. *Social Stratification.* 3 units. *Roy*

242. *The Sociology of Occupations and Professions.* 3 units. *McKinney and Roy*

243. *Population Dynamics and Social Change.* 3 units. *Myers and Hartford*

247. *Community and Society.* 3 units. *Thompson*

251. *The Sociology of Modernization.* 3 units. *Tiryakian*

253. *Social Institutions.* 3 units. *Thompson*

255. *Race and Culture.* 3 units. *Thompson and Palmore*

259. *Religion and Social Change.* Prerequisite: either Anthropology 264, Sociology 151, or the equivalent. 3 units. *Tiryakian and Wilson*

272. *The Socialization Process.* 3 units. *Kerckhoff*

275. *Social Attitudes and Individual Behavior.* 3 units. *Back and Kerckhoff*

278. *Social Structure and the Life Cycle.* 3 units. *Maddox*

282. *Principles of Sociological Analysis.* 3 units. *McKinney and Wilson*

295. *Methodology in Sociology.* 3 units. *Back and Smith*

297. *Statistical Analysis in Sociology.* Prerequisite: Mathematics 133 or an equivalent course or permission of the instructor. 3 units. *Hartford*

For Graduates

325. *Social Aspects of Mental Illness and Treatment.* 3 units. *Preiss*

341. *Special Problems of Complex Systems.*

(a) *Industrial and Professional Systems.* 3 units. *McKinney, Roy, and Pondy*

(b) *Mass Communications.* 3 units. *Smith*

(c) *Urban Society.* 3 units. *Thompson and Smith*

(d) *Human Ecology.* 3 units. *Thompson and Smith*

351, 352. *Seminar in Social Organization.* 3 units each semester. *Maddox, McKinney, and Pondy*

361. *Seminar in Comparative Sociology.* 3 units. *Wilson*

373, 374. *Social Psychological Issues in Sociology.* 3 units each semester. *Back, Kerckhoff, and Preiss*

381. *Development of Sociological Theory.* 3 units. *McKinney and Tiryakian*

385, 386. *Seminar in Sociological Theory.* Prerequisite: Sociology 381 or equivalent. 3 units each semester. *McKinney and Tiryakian*

392. *Individual Research in Sociology.* Prerequisite: Sociology 295 or permission of the instructor. 3 units. *Back, Kerckhoff, and Smith*

397, 398. *Seminar in Special Research Problems.* Prerequisite: Permission of instructor. 3 units each semester. *Back, Smith, Hartford, and Myers*

Anthropology

For Seniors and Graduates

220. *Society and Culture in India.* 3 units. *McCormack and R. Fox*

222. *Topics in African Anthropology.* 3 units. *Staff*

231. *Physical Anthropology.* 3 units. *Buettner-Janusch*

232. *Human Genetics.* Prerequisites: Anatomy 231, Zoology 131 (or an elementary course in biology including genetics), or permission of instructor. 3 units. *Buettner-Janusch*

238. *Language and Society.* 3 units. *McCormack, Apte, and Ullrich*

240. *Indo-Aryan Linguistics.* Prerequisite: Linguistics 101 or permission of instructor. 3 units. *Apte*

249. *Economic Anthropology.* 3 units. *Crocker*

260. *Linguistic Anthropology: Phonemics.* Prerequisite: permission of the instructor. 3 units. *Apte*

261. *Linguistic Anthropology: Morphology and Syntax.* Prerequisite: Anthropology 260 or permission of the instructor. 3 units. *Apte*

262. *Anthropology of Law.* 3 units. *Crocker*

263. *Primitive Art and Music.* 3 units. *La Barre*

264. *Primitive Religion.* 3 units. *La Barre, Crocker, and J. Fox*

265. *Personality and Society.* 3 units. *La Barre*

266. *Personality and Culture.* 3 units. *La Barre*

276. *Analysis of Kinship Systems.* 3 units. *McCormack and Crocker*

280, 281. *Seminar in Selected Topics.* Permission of the instructor required. 3 units each semester. *Staff*

291, 292. *Anthropological Theory.* 3 units each semester. *Crocker and J. Fox*

For Graduates

330. *Seminar in Anthropology.* 1 to 3 units each semester. *Staff*

393. *Individual Research in Anthropology.* 3 units. *Staff*

410. *Seminar in the Government, History, and Social Structure of India and Pakistan.* 3 units. *McCormack, R. Fox, and Associates*

Zoology

Professor Horn, *Chairman* (227 Biological Sciences Building); Professor Gregg, *Director of Graduate Studies* (047 Biological Sciences Building); Professors Bailey, Bookhout, Buettner-Janusch, Costlow, Fluke, Klopfer, Livingstone, Schmidt-Nielsen, Vernberg, and Wilbur; Adjunct Professor Stefansson; Associate Professors Gillham, Hunter, Nicklas, Tucker, Wainwright, and Ward; Assistant Professors Doyle and Vogel

The Department of Zoology offers a variety of programs tailored to individual needs of students seeking to earn an A.M. or Ph.D. degree.

Generally speaking, students entering the department will be minimally equipped to pursue an advanced degree if they have completed twenty-four hours of college-level biology along with some formal training in calculus, organic chemistry, physics and foreign languages.

The department recognizes and supports the modern trend toward interdisciplinary research. Thus, it is ready to accept advanced undergraduate work in mathematics or in natural sciences other than biology in lieu of some portion of the usual entrance requirements in biology proper. Furthermore, it is ready to encourage any student to undertake a program of study leading, in effect, to an interdisciplinary degree sponsored by the department. Interested students are urged to consult the graduate bulletins of Duke University and of The Consolidated University of North Carolina for information about courses for which credit may be received. Special attention should be given to announcements from departments of Anatomy, Biochemistry, Botany, Chemistry, Geology, History, Mathematics, Microbiology and Immunology, Philosophy, Physics, Physiology and Pharmacology, Psychology, Sociology and Anthropology, and Zoology.

For Seniors and Graduates

201. *Animal Behavior.* Prerequisites: physiology, genetics and evolution, or consent of instructor. 3 units; 4 units with laboratory. *Klopfer*

203. *Marine Ecology.* 4 units. (See also Marine Laboratory.) *Staff*

205. *Elements of Theoretical Biology.* Prerequisites: one year each of

college biology and mathematics, or consent of instructor. 3 units. *Gregg*

213. *Ecological Oceanography.* Prerequisites: courses in ecology or invertebrate zoology, chemistry, and calculus; differential equations strongly recommended. 3 units. *Doyle*

214. *Biological Oceanography.* Prerequisites: a course in invertebrate zoology, ecology, marine biology or an appropriate equivalent. Chemistry through organic. One year of physics and mathematics. 4 units. *(Given at Beaufort.) Staff*

216. *Limnology.* 3 units; 4 units with laboratory. *Livingstone*

224. *Vertebrate Zoology.* Prerequisite: Zoology 53. 4 units. *Bailey*

228. *Experimental Embryology.* 4 units. *Gregg*

232. *Human Genetics.* Prerequisites: Anatomy 231 (Zoology 131) or an elementary course in biology including genetics, or permission of the instructor. 3 units. *Buettner-Janusch*

238. *Systematic Zoology.* Prerequisite: Biology 1-2. 4 units. *Bailey*

240. *Chemical Oceanography.* Prerequisites: one year of physics, mathematics through calculus, a year of analytical chemistry or physical chemistry; an introductory course in general oceanography or a course in physical oceanography or permission of the instructor. 6 units. *(Given at Beaufort.) Stefansson*

243. *Cytology.* Prerequisite: one year of biology. 4 units. *Anderson (Botany) and Nicklas*

244. *Topics in Cell Structure and Function.* Prerequisite: Zoology 243 (Botany 243) or equivalent and permission of instructor. 2 units. *Moses (Anatomy) and Nicklas*

245. *Radiation Biology.* Prerequisites: college physics and mathematics, organic chemistry. 3 units, or 4 units with laboratory. *Fluke*

246. *Physical Biology.* Prerequisites: Mathematics 22, Chemistry 151, Physics 41, and one and one-half years of college biology or consent of the instructors. 4 units. *Fluke and Wainwright*

247. *Biological Nucleonics.* Prerequisites: consent of the instructor and one year each of college biology, chemistry, and physics. 3 units. *Fluke and Woods (Forestry)*

248. *Introductory Biochemistry.* Prerequisites: Chemistry 151, one year of college physics (second semester may be concurrent), Mathematics 22, or consent of the instructor. 3 units. *Wakil (Biochemistry) and Kirshner (Biochemistry)*

250. *Physiological Ecology of Marine Animals.* Prerequisite: a course in physiology. 6 units. *(Given at Beaufort.) Vernberg*

252. *Comparative Physiology.* Prerequisite: Zoology 151 or equivalent. 4 units. *Schmidt-Nielsen*

271. *Cellular Physiology.* Prerequisites: two years of biology and at least one year of chemistry. 4 units. *Wilbur and Staff*

274. *Marine Invertebrate Zoology.* Prerequisite: Biology 1-2. 6 units. *(Given at Beaufort.) Staff*

278. *Invertebrate Embryology.* Prerequisite: Zoology 92. 4 units. *Bookhout*

280. *Principles of Genetics.* Prerequisites: introductory courses in biology, chemistry and mathematics. 3 units. *Boynton, Gillham and others of the University Program in Genetics*

For Graduates

351, 352. *Departmental Seminar.* 1 unit credit by arrangement. *Staff and Invited Lecturers*

353, 354. *Research. Staff*

355, 356. *Seminar* 2 units.

385. *Current Topics in Population Genetics and Evolution.* Prerequisites: Zoology 280 or its equivalent and consent of the instructor. 1 unit. *Ward and others of the University Program in Genetics*

Master's Degree for Students Specializing in Physical Therapy

Students specializing in physical therapy may request admission to the Graduate School and, if admitted, follow the curriculum for the Master of Arts degree in any of several related fields. Admission must be through the appropriate graduate department. Selected physical therapy subjects are integrated with the graduate courses throughout the two-year period. Upon satisfactory completion of these requirements, a Master of Arts degree and a Certificate in Physical Therapy will be awarded. For information concerning the Physical Therapy Program write to: Physical Therapy Department, Box 3247, Duke University Medical Center.

The School of Law

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General Information

Law School: Its Purpose and Methods

The official name of the School is the Duke University School of Law, but it will be referred to in these pages as the Duke Law School or the Law School.

The Duke Law School derives historically from the School of Law of Trinity College, with its history of legal instruction beginning in the middle of the past century, antedating the Civil War. When, in the 1920's, Trinity College became Duke University, the Law School was completely reorganized. This reorganization culminated with the housing of the Law School on the new West Campus in 1930, when the character of the Duke Law School can be said to have been reshaped.

The curriculum of the Law School provides thorough preparation for the practice of law in any state, and its graduates have been admitted to the bar throughout the nation. Opportunities for specialization in particular branches of the law are afforded.

In carrying out the trust imposed by the indenture establishing the Duke Endowment, the Law School seeks to have the student acquire knowledge and comprehension not only of legal doctrine, but also of the judicial process and of the social, economic, and political problems with which law and lawyers must deal. The method of instruction employed compels analysis of judicial opinions and inquiry into the non-legal as well as the legal considerations which underlie them. In ap-

propriate courses, special consideration is given to the work of the legislative and administrative agencies of government. In recognition of the increasing importance of the role of the lawyer in representing private interests before government agencies and in government service, a broad program is offered in the public law field. Opportunity for creative student work is provided by seminar courses and supervised individual study and research.

Practical training is not left for the first years of practice. A carefully integrated series of courses is designed to give students actual experience in the work of lawyers. Legal research, writing courses, moot court work, and practical study of steps in law suits in the first and second years are followed in the third year by seminar courses emphasizing trial techniques, legal planning and drafting, opportunity to participate in legal aid, and interdisciplinary approaches. A student bar association affords a means whereby the student may gain acquaintance with the professional organizations through which a lawyer may and should contribute to the well-being of his profession and society.

Courses of Study and Degree Programs

Juris Doctor Degree

Upon favorable recommendation of the Faculty, the degree of Juris Doctor (J.D.) will be conferred on students who shall have successfully completed six semesters of law study, the last two semesters of work immediately preceding the granting of such degree having been completed in this School.

A student shall be deemed to have completed successfully six semesters of law study if during this period he has completed the following requirements:

(1) secured a passing grade in courses aggregating 84 semester hours;
(2) secured in every required course a grade not requiring repetition thereof; and
(3) secured a weighted average at least five points above passing, whether computed by including or by excluding the grades in the first-year courses.

Students who have spent only their last two semesters of study in residence in this School must have received a weighted average at least five points above passing for that year.

Curriculum

First Year (Required)

	Semester Hours	
	Fall	*Spring*
Civil Procedure	3	3
Constitutional Law	3	2
Contracts	3	2
Criminal Law	3	–
Criminal Procedure	–	2
Legal Accounting	–	2
Legal Research and Writing	–	–
Property I	2	2
Torts	2	3
Total	16	16

Second and Third Years

In the absence of special authorization by the Dean, each student is required to take in each semester courses aggregating not less than 12 and not more than 16 hours.

The program in the second and third years is entirely elective. In planning his elective program, the student must bear in mind that certain courses are prerequisites to other advanced courses:

Business Associations is prerequisite to Business Planning, Securities Regulation, and Seminar in Corporate Planning and Drafting.

Evidence is prerequisite to Trial Practice.

Federal Taxation I and Federal Taxation II are prerequisite to Federal Taxation III, Federal Taxation IV, Federal Taxation V, and the Seminar in Taxation.

Federal Taxation IV and Trusts and Estates I are prerequisites to the Seminar in Estate Planning.

Jurisprudence is prerequisite to the Seminar in Jurisprudence.

Labor Relations is prerequisite to the Seminar in Labor Law.

Trade Regulation is prerequisite to the Seminar in Antitrust.

Constitutional Law is prerequisite to the Seminar in Civil Liberties and Rights.

The student should also bear in mind that, while the program in the second and third year is entirely elective, for logical course progression and in order to avoid conflicts in the class schedule it would be advisable for certain basic electives to be taken in the second year and certain other basic electives in the third year. No recommended elective on the follow-

ing "second year list" will conflict on the class schedule with any other elective on the "second year list," but it may conflict with any elective on the "third year list." Likewise, no elective on the "third year list" will conflict on the class schedule with any other elective on the "third year list," but it may conflict on the class schedule with any elective on the "second year list."

Second Year—Recommended

	Hours
Administrative Law	3
Business Associations I & II	4
Commercial Law	4
Evidence	3
Federal Tax I	3
Federal Tax II	3
*International Law	3
*Jurisprudence	3
*Labor Relations	3
*Trade Regulations	4
Trusts and Estates I	3
Trusts and Estates II	3

*For those intending to take seminars in Antitrust, Jurisprudence, Labor Law, or advanced courses and seminars in International Law.

Third Year—Recommended

	Hours
Admiralty	3
Business Planning	4
Conflicts	3
Corporate Finance	2
Debtor's Estates	3
Federal Courts	3
Federal Tax III	2
Federal Tax IV	2
Federal Tax V	2
Land Use Planning	3
Legal Profession	1
Securities Regulation	3
Social Legislation	2
State & Local Government	2
Trial Practice	2
Workmen's Compensation	2

Seminars Offered Each Year

Sem Civil Liberties & Rights	2
Sem Criminal Procedure	2
Sem Anti-Trust	2
Sem Corporate Planning & Drafting	2
Sem Criminal Law	2
Sem Estate Planning	2
Sem Labor Law	2
Sem Military Law	2
Sem Poverty & Law	2
Sem Psychiatry & Law	2
Sem Regulated Industries	2
Sem Taxation	1
Sem Urban Renewal	1

Courses & Seminars Offered in Alternate Years

1969-70

Comparative Law	3
Family Law	2
Insurance	2
International Transactions	3
Mortgages	2
Seminar in International Organizations	2
Seminar in Jurisprudence	2

1970-71

Equitable Remedies	2
Legal History	2
Natural Resources	3
Seminar in Consumer Protection	2
Seminar in Legislation	2
Seminar in Soviet Law	2
Seminar World Law	2

Seminars Offered on an Irregular Basis

Seminar in Legislation	2
Seminar in Property Transactions	2

Individual research for credit not exceeding three semester hours per year will be permitted, subject to the approval and under the supervision of a member of the faculty.

In addition, the full resources of the University are available to students who wish to pursue limited studies in other disciplines during their second or third years of law study. Subject to faculty approval, courses in other departments may be credited toward the degree requirements of the Law School.

Graduate Study in Law

The graduate program is framed with a view to the encouragement and recognition of legal scholarship. It is designed for the qualified candidate who aspires to a teaching career, or who wishes to become proficient in a special field of the law, to do legal research, to prepare himself for a public-law practice in or out of government, or to pursue studies in subjects he has not explored previously. This program is especially suitable for law teachers and for those who wish to become either law teachers or specialists in the law and who wish to carry on advanced study and original research under faculty supervision, and for foreign law students, teachers, and lawyers who desire to extend their knowledge of the laws of the United States and to engage in comparative legal research.

Three graduate degrees are granted: the degree of Master of Laws (LL.M.), the degree of Master of Comparative Law (M.C.L.), and the degree of Doctor of Juridical Science (S.J.D.).

Master of Laws Degree

The degree of Master of Laws is reserved for students who, having demonstrated their capacity for graduate work in law, maintain a level of scholarship substantially higher than that required for the degree of Juris Doctor.

Course Requirements

The candidate for this degree is required to complete a course of study comprising not less than twenty nor more than twenty-six semester hours, or approved research equivalent thereto. Two full semesters are required for the completion of this program. A candidate for this degree is required to include in his course of study at least two courses or seminars selected from those offered in Jurisprudence, in Legal History, and in the international or comparative law area. Other suitable courses will be selected by the candidate subject to the approval of the Committee on Graduate Study. In special circumstances, credit of not more than two hours a semester may be given for approved, supervised research projects. In addition to completing twenty semester hours of courses or seminars the candidate must prepare and submit an essay, representing substantial research on a legal subject. This essay is to be prepared under the supervision of the instructor in charge of the field in which the research is done. The candidate will find it helpful to have formulated a project of research, or alternative projects, before his admission to graduate study or, at any rate, before pursuing his graduate study in residence. In appropriate cases the candidate will be permitted, and may be encouraged, to take related work in other departments of the University.

The program of study leading to the degree of Master of Laws is at

present under study by the faculty. No candidates for the degree will be admitted to the Law School during the academic year 1969-1970.

Master of Comparative Law Degree

The degree of Master of Comparative Law is awarded only to students who maintain a level of scholarship substantially higher than that required for the degree of Juris Doctor.

Course Requirements

The candidate for this degree is required to complete a course of study comprising not less than twenty semester-hours. At least two semesters in residence are required for the completion of this program. A candidate for this degree is required to include in his course of study at least two courses from those offered in the world law and comparative law area, and either Jurisprudence or Legal History. Other suitable courses will be selected by the candidate subject to the approval of the Committee on Graduate Study. In special circumstances, credit of not more than two hours a semester may be given for approved, supervised research projects. The candidate is also required to submit an essay representing substantial research on a subject of comparative or international law, written in the English language. This essay is to be prepared under the supervision of the instructor in charge of the field in which the research is done. In appropriate cases the candidate will be permitted, and may be encouraged, to take related work in other departments of the University.

Doctor of Juridical Science Degree

Upon recommendation of the faculty, the degree of Doctor of Juridical Science will be conferred on students admitted to candidacy for that degree who complete and submit a monograph or series of essays suitable for publication and deemed by the faculty to be of distinguished character and who pass an oral examination before a special committee appointed for that examination.

Requirements

At least one academic year and, in the absence of an extension granted by the faculty, not more than three years must elapse between the award of the Master's degree and the award of the Doctorate of Juridical Science. Students who have received the Master's degree from another law school must spend at least two full semesters engaged in research at this School, and in addition may be required to complete a course of study prescribed by the Committee on Graduate Study. The monograph or series of essays required may be based upon, or be an extension of, the essay required for the Master's degree, provided substantial additional research is represented.

Resources for Study

The Law Building

The new Law School building was completed and occupied in September of 1962. Located just off the Gothic core of the West (main) Campus, the building is of modified Georgian architecture with contemporary overtones. It reflects a notable characteristic of the School: a high ratio of facilities to students admitted. Despite long-range plans to keep the student body modest in size, the general spaciousness, number of classrooms and seminar rooms, library reading-room seating, library stack spaces, student carrels, student lockers, student lounge rooms, faculty offices, quarters for legal publications, special quarters for institutional studies, and courtroom are of proportions ordinarily associated with a far larger student body.

Additional information concerning the Law School and its facilities is contained in the illustrated brochure *Studying Law at Duke.*

The Law Library

The law library is one of the large law collections in the country. It consists of American and English statutory and case law; collections of international, comparative, and foreign law materials; treatises;

digests; encyclopedias; the various selected case series; a comprehensive collection of legal periodicals; and publications in the fields of history, economics, government, and other social sciences, supplemental to the strictly legal materials. The Library receives every current legal periodical of general interest printed in the English language and complete up-to-date legislation of the United States and of every state and territory of the Nation.

There are many thousands of additional volumes of a legal nature in the main University Library building, as well as the general collection of over a million volumes, to all of which the law students and faculty have convenient access.

The Law Library is administered by a professionally trained staff and is open to the public daily, as well as in the evenings when the Law School is in session.

Rule of Law Research Center

In the fall of 1958, the Duke Law School established its Rule of Law Research Center, with Professor Arthur Larson as its Director.

The purpose of the Center is to undertake both long-range and current studies and publications bearing on the settlement of international disputes and the achievement of peaceful change under law. Typical projects include two recently published books: *Sovereignty within the Law* and *Propaganda: Toward Disarmament in the War of Words*, and studies of Population Control Laws, and Compliance and Enforcement under International Law. The Center also produces studies and publications in the field of the law of civil rights and race relations. A staff of international lawyers is maintained, with undergraduate law students as research assistants. The regular staff includes specialists in the world's major legal systems. Opportunities for course work at the Law School include not only the regular courses in International Law, Comparative Law, International Organizations, and International Transactions, but a unique Seminar in World Law for students particularly interested in this approach to the problem of world order.

Duke University students are also encouraged to combine graduate work with activities of the Center, opportunities for which are made available as far as practicable.

Student Life

Living Accommodations

*Housing**

The Duke University Graduate Center provides accommodations available to men and women law students. In addition, women enrolled in the Law School may reside in the Town House Apartments, which are complete with basic furnishings, utilities, and maintenance. Of course, there are numerous private apartments and rooms proximate to the campus in the town or in the surrounding countryside.

A resident student, in order to retain his room for the succeeding academic year, must make application at the Office of Housing Management for confirmation of the reservation.

The authorities of the University do not assume responsibility for persons selected as roommates. Each student is urged to select his roommate when the room is reserved. Any student who occupies a double room without a roommate will be given written notice from the Housing Office to obtain a roommate or he may be required to pay the rental consideration for the whole room.

Any exchange of rooms must be made at the Office of Housing Management. Persons exchanging rooms without the approval of the Housing Management Office will be subject to the charges for both rooms.

Duke University Apartments, which consist of efficiency and one- and

*Information pertaining to graduate housing facilities is subject to change prior to September, 1969.

two-bedroom apartments, are available to married law students. The apartments are complete with basic furnishings. Heat, electricity (except for window fans and air conditioners), hot and cold water, garbage collection, and maintenance of grounds are all included in the rental charge. For further information on married-student apartments, write to the Office of Housing Management, Duke Station, Durham, North Carolina 27706.

Residence hall rooms and Duke University Apartments may be reserved by new applicants after they have been accepted officially for admission to the School of Law. Applications for residence hall rooms are to be made to the Office of Housing Management, Duke Station, Durham, North Carolina 27706. For fees and deposit details see pages 24-25.

Food Services

Food service is cafeteria style. The dining facilities on the West Campus include two cafeterias with multiple-choice menus, a grill, and the Oak Room with table service of full meals and *a la carte* items. In the Men's Graduate Center there is a cafeteria with multiple-choice menus and a Coffee Lounge where sodas and sandwiches are served from 11:30 a.m. to 11:00 p.m.

Conduct of Students

Duke University expects and will require of all its students continuing loyal cooperation in developing and maintaining high standards of scholarship and conduct.

The University wishes to emphasize its policy that all students are subject to the rules and regulations of the University as currently in effect or, from time to time, are put into effect by the appropriate authorities of the University.

Any student, in accepting admission, indicates his willingness to subscribe to and be governed by these rules and regulations and acknowledges the right of the University to take such disciplinary action, including suspension and/or expulsion, as may be deemed appropriate, for failure to abide by such rules and regulations or for conduct adjudged unsatisfactory or detrimental to the University.

Services Available

Placement Service

Duke Law School's placement service is a very active one, in constant touch with leading law firms throughout the nation, federal and state agencies, corporate legal departments, and other employment opportu-

nities. Special attention is given to placing second-year students in law internships during the following summer.

Each year the number of representatives coming to interview exceeds the number of students available to become associated with these potential employers.

Medical Care

With exceptions noted below, full medical and surgical care is furnished to all regularly matriculated law students of the University who have paid the semester tuition. This service is under the direction of the physician in charge with the cooperation of the staff of Duke Hospital. It includes hospitalization (limited to thirty days), medical and surgical care, drugs, dressings, x-ray studies, and ward (but not special) nursing. A charge for board is made at the same rate as in the University dining halls. Refraction of eyes and treatment of teeth and of all chronic and pre-existing conditions, such as diseased tonsils, hernia, elective surgery, chronic skin conditions, and endocrine disturbances, or accidents or illnesses occurring during vacations or while off the campus are not included in this service. The cost of any necessary braces and orthopaedic appliances, as well as special nursing, must be borne by the patient. If the student has insurance providing hospitalization, surgical, or medical benefits, the benefits shall be applied to the cost of his medical care.

Employment Opportunities

Although it is not advisable for a law student to undertake any substantial amount of outside work, particularly in the first year, arrangements have been made to provide part-time employment for capable law students who otherwise would be unable to meet the expense of studying law at Duke.

A number of positions as assistants in the Law Library and as research assistants are open to students, with some preference being given to those who do not receive other aid from the University.

Professional and Honorary Organizations

Order of the Coif

A chapter of the Order of the Coif, national legal scholarship society, has been established at Duke University School of Law. Its purpose is "to foster a spirit of careful study and to mark in a fitting manner those who have attained a high grade of scholarship." Election is restricted to the ten per cent of the graduating class who have attained the highest records in their law school work.

The Duke Bar Association

The Duke Bar Association coordinates the professional, social and other extra-curricular activities of the student body. The Association resembles, in its composition and purpose, both a university student government and a professional bar association. Among the various committee activities are publishing the Placement Bulletin, procuring special speakers, assisting in Moot Court competition, publicizing Law School activities, and sponsoring athletic and social programs.

The Duke Bar Association sponsors professional and social activities throughout the year. Dues are $15.00 per annum, payable in September.

Legal Research Program

The Legal Research Program was created to provide second- and third-year students with an opportunity to prepare legal memoranda on actual problems submitted by practicing lawyers, judges, or legislative committees. Supervised by a student editorial board, the Program is designed to develop in the student the legal skills of research, writing, and editing that are indispensable to the practicing attorney. The Program in 1968-69 also initiated a new project for third-year students involving the appeal of *habeas corpus* petitions of indigent prisoners to the United States Court of Appeals for the Fourth Circuit. The briefs, written by the students under the direct supervision of a member of the faculty, are argued orally by the professor before the Court, providing both the students and the professor with a challenge beyond the case-book study of law.

Moot Court Board

A program of student Moot Court arguments is conducted under the supervision of the Moot Court Board as a part of the course in Research and Writing in which all first year students are required to participate. In addition, there is an intramural program for upper-class students from which a team is selected each year to represent the Law School in the National Moot Court competition.

Duke Legal Aid Society

In the fall of 1968 Duke began a unique program to meet the pressing need for assistance with legal problems of the poor. With the aid of a grant from the Office of Economic Opportunity, this new arm of the law school will serve as a clearinghouse to which legal questions of special importance can be referred by established community legal assistance programs in other areas. In addition, a number of upperclassmen can work directly with such problems through field offices. All student work

will be supervised full-time for the law school by experienced members of the bar and assisted by a regular office staff.

The Duke Legal Internship Program

In the summer of 1965, the Law School with the aid of a grant from the National Defender Project, initiated a summer internship program in the administration of criminal justice. This program, which was organized and is directed by Professor Everett, brings the student interns into contact with a variety of problems in the criminal law, as they participate under the supervision of prosecuting attorneys and court-appointed defense counsel in the investigation and preparation of cases for trial.

International Law Society

Recognizing the importance of the role of law in international affairs, the Duke International Law Society provides a program for examining the application of international law to world problems. Through a series of lecture-discussions in the fall called "A Short Course in International Law" and by featuring distinguished speakers in the field throughout the year, the Society provides its members the opportunity to make contact with the men and ideas that are shaping the development of international law.

Other activities include participation in the annual Philip C. Jessup International Law Moot Court competition, attendance at conferences sponsored by the Association of Student International Law Societies, and sponsorship of a biennial conference on a selected topic of international significance.

Membership is open to all law students at $5.00 per annum.

Legal Fraternities

The two legal fraternities at Duke are Hughes Inn of Phi Delta Phi and Wiley Rutledge Chapter of Phi Alpha Delta. During the academic year, these organizations sponsor luncheons and other meetings, which feature topics of professional interest, and a number of social activities.

Prizes and Awards

Several academic prizes and awards have been established by the law school or are sponsored by outside individuals or organizations to recognize general academic excellence or high achievement in specific areas. The following, while not a complete list, will indicate some of the academic prizes and awards available each year to law students who distinguish themselves.

American Jurisprudence Prize Awards

American Jurisprudence Book awards are made to the student in each course who obtains the highest scholastic grade in that course. These book awards are sponsored yearly by the Lawyers Co-operative Publishing Company.

Corpus Juris Secundum Award

Three students, one each for the First, Second, and Third Year Classes, are selected by the Faculty as the recipients of this award. Awards are made to the student in each class who has made the most significant contribution to overall legal scholarship. The American Law Book Company sponsors this award.

Hornbook Series Award

Three students, one each from the First, Second and Third Year Classes, are the recipients of this award. Awards are made to the student in each class who has obtained the highest scholastic average in his class for the entire year. These awards are sponsored by the West Publishing Company.

Nathan Burkan Copyright Award

Each year the Nathan Burkan Memorial Competition offers an award of $250 to the student who writes the best paper on Copyright Law.

Prentice-Hall Tax Prize

An award, which in previous years has been a complimentary subscription to the Prentice Hall Tax Guide, is made to the graduating senior who has made the most outstanding record in the courses in federal taxation. This prize is sponsored by Prentice-Hall, Inc.

United States Law Week Award

This important award is made to a graduating senior selected by the faculty as the student who has made the greatest academic progress during his final year of study. It is sponsored by the Bureau of National Affairs, Inc. and consists of a year's complimentary subscription to *United States Law Week.*

Will Drafting Contest

In order to encourage good draftsmenship of wills, the North Carolina National Bank of Charlotte, North Carolina, each year conducts a will drafting contest which is open to all law students of the University of

North Carolina, Wake Forest College, and Duke University who are not already members of the Bar. Prizes of $50 each are awarded for the two best entries from each law school. The best of these six entries receives an additional award of $150. The second best entry receives an additional $50 prize.

Willis Smith Award

This is the most significant award that can be earned by a law student at Duke. It is presented annually at graduation to the member of the graduating class who has achieved the highest academic average for his entire three years of law study. The award is sponsored by the family of our deceased alumnus United States Senator Willis Smith and consists of a set of legal volumes selected by the recipient of the award.

Recreational Facilities

The University is located about two miles from the business district of Durham on wooded hills constituting part of the approximately 8,500-acre Duke Forest, which is maintained by the School of Forestry. Within a short distance from the campus are facilities for golf, horseback riding, and woodland hiking. Students of the Law School are entitled to the use of the University gymnasium, tennis courts, swimming pool, golf course, and similar privileges. Other opportunities for physical activity are available in the Intramural Program, as well as through such activity groups as the outing, sailing, and cycling clubs. Skiing has become increasingly popular. Several bowling alleys are available in and near Durham. Motion pictures are shown in Page Auditorium twice a week, and concert programs, recitals, lectures, and plays are presented frequently.

Publications

Law and Contemporary Problems

The School of Law publishes a quarterly, *Law and Contemporary Problems,* edited by Professor Clark C. Havighurst. This periodical, now in its thirty-second volume, presents in each issue a symposium on a problem of current importance, in which the inter-related social and economic, as well as legal, factors are discussed by writers of competence in these respective fields.

The circulation of *Law and Contemporary Problems* extends not only to members of the legal profession and law libraries throughout the country but also to industrial and financial concerns, governmental agencies, and

public and general university libraries. Individual issues are frequently used as materials for study in University courses.

Editorial assistantships are available to second- and third-year students not writing for the *Duke Law Journal.* Individuals are selected for these positions on the basis of achievement and receive stipends for their work.

Duke Law Journal

American legal education boasts at least one unique institution. Only in America, and only in law, are the scholarly professional journals edited and largely written by students. The *Duke Law Journal* carries forward this proud tradition, which dates from the latter part of the nineteenth century. Articles written by teachers, lawyers, judges, and other scholars are critically evaluated and edited by the board of student editors. Notes and comments concerning recent judicial, legislative, and other developments are written by the students themselves, and edited by their fellow students. Members of the faculty are of course available for advice and consultation. The six annual issues are widely circulated and become an integral part of the store-house of informal and critical materials to which the profession in all its branches must resort. The student-edited law journal has had a profound influence on the growth and development of the law.

Membership in the *Journal* is the highest honor that can be attained by the student, being reserved for those who not only excel in their courses but also demonstrate capacity to do creative research and writing. Moreover, in the well-nigh universal judgment of the profession, the experience gained in this work provides the best training that the Law School has to offer. It should be the aim of every qualified student to take advantage of this opportunity.

Corporate Practice Commentator

The *Corporate Practice Commentator*, a quarterly periodical devoted to significant developments and new thinking in the field of corporation law and practice, is edited by Dean F. Hodge O'Neal. Although the *Commentator* is published by a commercial concern, it is assembled and the manuscripts are prepared in the School of Law under the direction of Professor O'Neal. The *Commentator* gives attention to matters of interest and importance to counselors and managers of corporate and other business enterprises. Primary emphasis is placed on corporation law and practice in the narrow sense, but considerable attention is devoted to antitrust questions, labor matters, patents and copyrights, executives' compensation, fair trade legislation, and other matters arising from business activities.

Admission

Beginning students may enter only at the opening of the fall semester in any year. Students who have completed the first year of law study at this or any other law school approved by the Association of American Law Schools may enter at the beginning of any semester.

Procedures

Application must be made on the prescribed Law School forms which will be sent upon request. A fee of $15 is charged for processing an application and a check or money order for this amount should accompany the application. No applicant will be accepted until all required documents are on file. These documents are:

(1) The application itself, to which a recent personal photograph must be attached;

(2) Transcripts of all college and graduate academic records;

(3) A report of the applicant's score on the Law School Admissions Test, described below;

(4) A completed "Memorandum to Deans" form. A copy of this form will be sent to all applicants. The applicant should deliver or mail this form directly to the Academic Dean or Dean of Student Affairs at the school he last attended. That Dean should be requested to fill out the form and return it directly to the Registrar, Duke University, School of Law, Durham, North Carolina 27706. If the applicant has attended more

than one undergraduate or graduate school, he should so indicate on his application. The Registrar will request additional forms from the appropriate Deans at such schools, if the Admissions Committee feels that they are necessary.

(5) Three (3) or more "Memorandum to Reference" forms from responsible persons who are well acquainted with the applicant's character and general qualifications, preferably faculty members. Three copies of this form will be mailed to all applicants. The applicant should deliver or mail these forms directly to the three references of his choice. Additional forms are available upon request. The references should be requested to return their forms directly to the Registrar, Duke University, School of Law, Durham, North Carolina 27706.

Most of our applicants apply while they are still in college, either in the fall or winter of their current college year. The Law School does not ordinarily wait for the completion of the current year's college work before admitting an applicant; normally it takes action on the basis of a transcript showing college work through the junior year although, at times, it may request a supplementary transcript showing also one term of the senior year. Such acceptance is subject to our final action taken in the light of the further supplemental transcript showing all the college work required for admission to the Law School. (However, it would be extremely rare for an accepted applicant to be rejected later on the basis of his completed transcript.) The suggested time for application by a student in college is the fall semester of his final year.

The Law School Admission Test, referred to above, is administered by the Educational Testing Service. It is given four times a year at examination centers conveniently located throughout the United States and at special foreign centers. The test administration date in the fall semester of the applicant's final year of undergraduate study is preferred, but not required. No special preparation for the test is suggested, since it is designed to measure aptitudes, abilities, and general background rather than knowledge of subject matter. The applicant's score on the test will be considered along with other data in passing upon his admission to the Law School. Application forms and information should be procured by writing directly to the following address: Law School Admission Test, Educational Testing Service, Box 944, Princeton, New Jersey 08540.

Personal interviews are recommended, but not generally required. Whenever possible, a visit to the Law School is especially helpful both to the applicant and the committee on admissions.

Requirements for Admission

An application for admission to Duke Law School as a candidate for the degree of Juris Doctor may be submitted by any person who is a

graduate of a college of approved standing. Applications may also be submitted by a candidate without a prior baccalaureate degree if he has completed in a college of approved standing work equivalent in number of units to three-fourths of that required for graduation and whose college work is of unusually excellent quality and in its entirety shows an average grade far above that required for graduation, the requirement in each case being determined by the regulations of the college where the work was taken. Graduates who have been admitted under this latter provision will be awarded the degree of Bachelor of Laws (LL.B.)

Admission of Students in Combined Course Program

A number of colleges, upon application by their students, have permitted those who have completed three years of undergraduate work to enter the Duke Law School and upon the satisfactory completion of the first year of law school work to receive their Bachelor of Arts degree from such colleges. It is suggested that students desiring to enter Duke Law School under such a program make inquiry of their proper college authorities regarding this point if they meet the applicable requirements for admission. A student from an undergraduate college of Duke University who has completed therein three years of study may apply to that college to enroll in a combined course wherein his first year of law study may be accepted toward the Bachelor of Arts degree.

After receiving the Bachelor of Arts degree and completing four additional semesters of law study, a student in the combined course program will receive the degree of Juris Doctor. However, not over three per cent of an entering class is admitted on this basis.

Students considering entrance before obtaining the Bachelor's degree should consult the rules of the Board of Bar Examiners in the state where they plan to practice law, for regulations applicable to this program.

Admission to Advanced Standing

Any person who has complied with the requirements for admission set forth in this announcement prior to the commencement of his law study, who presents evidence of the satisfactory completion of at least one year of study at any law school which is a member of the Association of American Law Schools, and who is eligible for readmission to the law school from which he proposes to transfer, may be admitted to advanced standing, subject to such rules as would be applicable to students in this School having a comparable scholastic record. Provisional credit for courses so completed will be given, final credit being conditioned on the completion of at least one full year of law study in this School with an average at least five points above the passing grade. Adjustment of credit

for work done in such other law schools may be made by the Dean or by vote of the faculty.

Admission of Candidates for Graduate Degrees

Applications for admission to graduate study should be addressed to the Dean of the Law School and should include transcripts of records of legal and prelegal work. (See section on graduate degrees, pp. 7-8.)

Master of Laws Degree

Any person who has received the first degree in law from a law school which is a member of the Association of American Law Schools, or from a university in the United Kingdom of Great Britain and Northern Ireland, or in Australia, Canada, Eire, or New Zealand, may be admitted as a candidate for the degree of Master of Laws, provided he satisfies the Committee on Graduate Study that his objective in desiring to do graduate work in law is consistent with the purposes for which the program is offered, and provided he demonstrates to the Committee, on the basis of his record, his capacity to take and profit by graduate work in law. Normally the applicant will be required to show a level of scholarship appreciably higher than that required for the first degree in law at the institution from which he received that degree. Those applicants who aspire to a teaching career are expected to have had, and are expected to maintain throughout their graduate studies, an exceptionally high academic record.

Master of Comparative Law Degree

Any person (1) who has received the degree of *doctor iuris* or its equivalent from a foreign university, or (2) who, having completed such academic training as is required in his country for the practice of law, has already demonstrated his special qualifications by publications in learned journals or otherwise, and who has the knowledge of and facility in the English language needed to achieve distinction in competitive study at an American university may be admitted as a candidate for the degree of Master of Comparative Law (M.C.L.). The applicant must satisfy the Committee on Graduate Study that his objective in doing graduate work in comparative law is consistent with the purposes for which the program is offered, and he must further demonstrate to the Committee, on the basis of a scholastic record comparable to at least a B average at an American law school of high standing, and by his previous publications, if any, his capacity to profit by graduate work in law. Normally, admission to candidacy for this degree is limited to applicants who intend to study one or more specific fields of American law with a view to utilizing such knowl-

edge upon their return to their respective countries, and who have already done some preparatory work in this direction.

Any person eligible to be admitted as a candidate for the degree of Master of Laws may, upon recommendation of the Committee on Graduate Study, be admitted to candidacy for the degree of Master of Comparative Law.

Doctor of Juridical Science

A person holding the degree of Master of Laws or Master of Comparative Law (or Jurisprudence) from this or any other law school which is a member of the Association of American Law Schools may, on recommendation of the Committee on Graduate Study and favorable vote of the faculty, be admitted to candidacy for the degree of Doctor of Juridical Science (S.J.D.), provided he completed the work for the Master's degree with distinction.

Financial Information

Fees and Expenses

It is estimated that the expenses of an unmarried student at Duke Law School, aside from tuition, will range between $700.00 and $850.00 per semester.

Tuition

Tuition is due and payable not later than the day of registration for a particular semester. For the academic year 1969-70, the tuition is $950.00 a semester. After the final day of registration no refund of the tuition will be made except for involuntary withdrawal to enter military service.

Registration Deposit

Admitted applicants are required to deposit the sum of $50.00 with the Office of the Bursar. Except for involuntary withdrawal to enter military service, this deposit is nonrefundable but will be credited to the account of the matriculated student.

*Living Accommodations**

Housing. The Graduate Center is available to men and women enrolled in the Law School. Most rooms are equipped for two persons and

*Information pertaining to graduate housing facilities is subject to change prior to September, 1969.

the rental charge for a double room is $325.00 for the academic year for each occupant ($162.50 per semester for each occupant). The charge for single room occupancy is $420.00 for the academic year ($210.00 per semester).

Women may also reside in the Town House Apartments which are complete with basic furnishings, utilities and maintenance. Three persons occupy each apartment. The rental charge for the academic year is $495.00 for each occupant ($247.50 per semester).

Duke University has 98 one-bedroom apartments under lease for a period of three years. An additional 104 two- and three-bedroom apartments will be under lease for one year to meet student requirements until a new married student housing complex is ready for occupancy about mid-summer 1970.

Detailed information about university housing facilities for single and married students, including rental rates, will be provided on request by the Director of Housing Management, Duke University, Duke Station, Durham 27706.

Room Deposit. A $25.00 deposit is required of each applicant before a residence hall room reservation is made. The initial room deposit is effective during the student's residence in the University residence halls if attendance is continuous in regular academic years.

Refund. The deposit will be refunded under the following conditions:

1. Within thirty days after the student has been graduated provided written notice is received at the Office of Housing Management requesting refund.
2. Upon withdrawal from Duke University Residence Halls by students enrolled on the semester basis, provided written notice is received by the Director of Housing Management by August 1st for cancellation of a reservation for the fall semester, and not later than January 15th for cancellation of a reservation for the spring semester.
3. When the reasons requiring withdrawal are beyond the student's control.

No refund will be made until the occupant has checked out of his room through the Housing Office and has settled his account with the Bursar.

Rooms are rented for the academic year but for no period of less than one semester without special arrangements. After the day of registration, no refund of room rent will be made except for involuntary withdrawal to enter the military service. Such refunds will be made in accordance with the University's established schedule. Regulations governing the occupancy of rooms will be supplied by the Director of Housing Management to those students who make application for housing.

Food Service. Food service is cafeteria style. The cost of meals runs approximately $2.50 to $3.00 per day, depending on the need and taste of the individual. The dining facilities on the West Campus include two

cafeterias, a grill, and the Oak Room with table service. In the Men's Graduate Center there is a cafeteria and a Coffee Lounge. The prices in these dining rooms are the same as on the West Campus.

Late Registration Fee

Students who register in any semester at a date later than that prescribed are required to pay to the Office of the Bursar a $10.00 penalty for late registration.

Athletic Events Fee

Law students may secure admission to all regularly scheduled University athletic contests held on the University grounds during the entire academic year by payment of the athletic fee of $25.00 per year plus any taxes that may be imposed. (This fee is payable in the fall semester.) They also may use the facilities of the Duke Golf Course upon payment of student green fees.

Motor Vehicle Registration Fee

Each motor vehicle operated on the campuses by students enrolled in the School of Law must be registered at the Traffic Office in the Social Science Building, and a $30.00 annual registration fee ($10.00 for two-wheeled vehicles) must be paid at this time by those who reside on campus.

Student Aid

Scholarships

Scholarships are available, varying in amount. Except for a few scholarships that are based purely on merit, scholarships are awarded only to needy applicants with markedly superior college records and comparable Law School Admission Test scores. Most scholarships awarded by the Law School cover all or part of the tuition charge. In cases of exceptional merit and need, a few scholarships may consist of full tuition and a stipend. The more usual form of financial aid is a combination of scholarship and loan. Scholarship grants will be continued to second- and third-year students maintaining an outstanding standard of work.

Loans

Prospective law students who will need loan funds to help finance their education should apply immediately following their acceptance for admission.

To the extent of the funds allocated to Duke University from its participation in the student loan program established under the National Defense Education Act, loans up to $2,000 per year (so limited as of the present writing) are available to Duke students. Interest on these loans begins to accrue at three per cent nine months after the student leaves the School, and repayment normally begins ten months after the student leaves the School, with complete repayment scheduled over a period up to ten years.

Some states have now established guaranteed loan programs with similar terms for graduate and undergraduate study by their own residents. In keeping with policies of the University Student Loan Office, a student from such a state will be asked to apply first to the appropriate state agency. The Law School will supply information regarding any particular state and will make appropriate certifications in support of the loan application. If loan funds prove unavailable through the state guaranteed loan program, the student should apply directly to Duke University.

Loans from funds held in trust by the University are also available to qualified law students. Interest on these loans, which mature after the student has left the School, accrues from the date of each note at the rate of one per cent until the student has left the School and for five years thereafter at three per cent per year, with repayment in installments over the five-year period. Loans from these funds are available up to $1,200 per year, less the amount of any loan made under the paragraph above.

Approval of a loan application is based on the financial need, satisfactory scholastic standing, and personal integrity of the applicant.

In addition to the loans above mentioned, the School participates in the American Bar Association Loan Fund and United Student Aid Fund programs. These programs provide guaranteed commercial bank loans to needy law students, up to $1,500 per year.

A special fund is also available to law students for small loans to meet temporary financial emergencies arising during the course of the year.

Registration and Regulations

Registration

All students are required to register on the dates prescribed in the Law School Calendar, at which time class schedules and course cards must be completed and approved. A student's registration for any semester is not complete until he has settled all indebtedness with the Office of the Bursar.

A student may alter his registration by enrolling in or withdrawing from a course during the first week of the semester. Thereafter, no further enrollment will be permitted, and withdrawal from a course is allowed only with the consent of the instructor.

Academic Regulations

Course Requirements

Minimum and Maximum Student Loads

No regular student is permitted to take less than twelve course hours per semester. No first-year student may take courses in excess of the first year program. Second- and third-year students are not permitted to take for credit more than sixteen course hours per semester, nor

to audit and take for credit more than seventeen course hours per semester.

In exceptional cases, with the consent of the Dean a student may take more or less than the prescribed maximum or minimum loads, but no student shall receive full residence credit if he takes fewer than the ten hours per semester for credit required for approved schools by the American Bar Association.

Scholastic Standards

Eligibility to Continue Law Study. Any student who at the end of his first year or at the end of any subsequent semester has an average grade lower than D on all the work then taken is ineligible to continue his work in the School. Any other student (1) whose average final grade at the end of his first semester is below D, or (2) whose average grade at the end of any subsequent semester on all the work then taken is below C, or (3) who in any single semester or in any single year receives failure grades in courses totaling eight or more semester hours, may at any time be declared by the Dean ineligible to continue.

Notification of Unsatisfactory Scholastic Standing. Every student subject to the provisions of the second sentence of the paragraph above, who has not been declared ineligible to continue his work in the School will be given a formal, written notice by the Dean's Office. This notice will set forth his average grade or grades and inform him (1) that he will be subject for the ensuing year to the special supervision of the Dean, who may order his dismissal from the School in the event of his failure to maintain a satisfactory scholastic standard, and (2) that he will be ineligible to receive a degree unless his work meets the scholastic requirements for graduation, which will be set forth in full in such notice.

Every other student whose average final grade at the end of any semester on the work of that semester, or on all work then taken, does not exceed the minimum average grade required for graduation by more than two points will be given a notice similar to that provided for above.

Attendance Regulation

Regular class attendance is required. The right to take the examinations, as well as the privilege of continuing one's study in the School of Law at any time, is conditioned upon regular attendance at the exercises of the School.

Regulations Governing Withdrawal for Military Reasons

A. A student in good standing enrolled in a one semester course who withdraws from the Law School in order to enter military service after

the end of the eleventh week of the semester (measured from the firs day of class) will be eligible to submit a paper in a seminar or undertak a special examination in a course on a *pass/fail* basis. Credit will b awarded for the course if the grade of *pass* is received on the paper o examination.

B. A student in good standing enrolled in a one year-two semeste course who withdraws from the Law School in order to enter militar service *after* the end of the eleventh week of the *first* semester and *befor* the end of the eleventh week of the *second* semester will be eligible t undertake a special examination on a *pass/fail* basis. Credit equal to th number of hours of study in the course undertaken in the first semeste will be awarded if the grade of *pass* is received.

C. A student in good standing enrolled in a one year-two semeste course who withdraws from the Law School in order to enter militar service *after* the end of the eleventh week of the *second* semester will b eligible to undertake a special examination on a *pass/fail* basis. Cred for the entire course will be awarded if the grade of *pass* is received.

D. A student in good standing who is required to withdraw from th Law School to enter military service before the time periods set forth i Rules 1-3, may nevertheless be permitted to take a special examination o a *pass/fail* basis in a course or submit a paper in a seminar in the discr tion of his professor in unusual circumstances where, in the opinion of th professor, the performance of the student justifies such action.

Nonacademic Regulations

Motor Vehicles

Each motor vehicle operated on the campuses by students enrolled i the School of Law must be registered at the Traffic Office within 5 da after arrival, and thereafter must bear the proper registration emble To register a vehicle, the student must pay the prescribed fee (see pag 26) and present the following documents:

1. State vehicle registration.
2. State operator's license.
3. Evidence of automobile liability insurance as required by Nort Carolina law: $10,000 per person and $20,000 per accident for person injuries, and $5,000 for property damage.

Parking, traffic, and safety regulations will be given each stude registering his vehicle. Students are expected to abide by these regul tions.

'he Honor System

The honor system of Duke Law School demands of each student the ighest standards of academic and professional conduct, subject to the ıdicial code promulgated by the students and approved by the faculty.

:egistration for Bar Examination

Many states now require that a student, prior to or shortly after eginning the study of law, register with the board of bar examiners of ıe state if he intends to practice therein. Each student should ascertain y writing to the secretary of the board of bar examiners of the state in hich he plans to practice, or by other channels of information, whether ıat state makes this requirement.

School of Medicine and Medical Center

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General Information

In 1924, James Buchanan Duke established The Duke Endowment, and thus made possible the creation of Duke University.

> I have selected Duke University as one of the principal objects of this trust because I recognize that education, when conducted along sane and practical, as opposed to dogmatic and theoretical lines, is, next to religion, the greatest civilizing influence.
>
> I have selected hospitals as another of the principal objects of this trust because I recognize that they have become indispensable institutions, not only by way of ministering to the comfort of the sick, but in increasing the efficiency of mankind and prolonging human life. . . . I very much hope that the people will see to it that adequate and convenient hospitals are assured in their respective communities. . . . It is to these rural districts that we are to look in large measure for the bone and sinew of our country.

In Item VIII of his will, Mr. Duke bequeathed to The Duke Endowment ten million dollars for Duke University, of which four million dollars was to be expended for a medical school, hospital, and nurses' home at Duke University.

Wards and clinics were named for eminent physicians and surgeons in order to remind the staff and students of what has been accomplished in medicine, as well as to follow Mr. Duke's Indenture: "I advise courses in history, especially the lives of the great of the earth."

The Council on Medical Education and Hospitals of the American

Medical Association gave Duke Class A approval in 1929 before the faculty and buildings were completed.

Announcements were then inserted in college papers that applications for the study of medicine, nursing, dietetics, hospital administration, and other health professions would be considered in 1930.

Duke Hospital was opened for patients on July 21, 1930. The first students in hospital administration were admitted on July 1, 1930; the first dietetic student on August 15, 1930; the first medical students (1st and 3rd year) on October 2, 1930; and the first student nurses on January 2, 1931. The schools and hospital were dedicated on April 20, 1931.

On the advice of Dr. Harvey Cushing and Dr. Henry A. Christian of Harvard, most of the faculty were appointed on "geographic" full time, so that private patients could obtain as good medical and surgical care as that given to the charity patients. Therefore, on September 15, 1931, the Private Diagnostic Clinic (PDC) was organized to improve the facilities for private patients, especially for those of moderate means.

Soon other additions became necessary, as students, faculty, and patients increased in numbers. The Baker House (originally for nurses, 1932) and the PDC wing (June, 1940) were provided by The Duke Endowment and Duke University. The W. B. Bell Research Building was started in 1940 with funds from the PDC, the Rockefeller Foundation, the Dorothy Beard Research Fund, and The Duke Endowment and was expanded by funds from the National Institutes of Health, the Markle Foundation, and Duke University. The Erwin Road Nurses' Dormitory (now Hanes House Annex) was built (1943) with funds from The Duke Endowment and the U. S. Public Health Service. The Elizabeth P. Hanes House for Nurses (1950) was a gift from Mrs. Frederic M. Hanes, with additional funds from the N. C. Medical Care Commission. The North Carolina Cerebral Palsy Hospital, which is directed by Duke, was dedicated on March 30, 1950. The Durham Veterans Administration Hospital, which is affiliated with Duke, was completed and dedicated in 1953. The W. S. Rankin Outpatient and PDC wing (1954) were financed by the PDC, The Duke Endowment, and the N. C. Medical Care Commission. The Geriatrics and the Diagnostic and Treatment wings (1963) were built with funds from the National Institutes of Health, the PDC, and The Duke Endowment.

Additional patient care facilities and an enlarged emergency outpatient clinic were provided in 1967 with the opening of the Main Entrance Building and in 1968 with occupancy of Rehabilition Facility I. Designed to house an extensive hyperbaric facility and related research laboratories, Clinical Research II was completed in 1967. In December, 1968, the Nanaline H. Duke Medical Sciences Building was dedicated. This facility contains the research and teaching programs of several preclinical departments.

Today, Duke University Medical Center continues to strive to lead contemporary medicine. This involves maintaining superiority in its four

primary functions: unexcelled patient care, dedication to its educational programs, national and international distinction in the quality of its research, and service to the region.

Growth is identified with a deeper involvement in the social aspects of health, the establishment of many advanced therapeutic and research facilities, a building program that will require one or more decades for its completion, and a new and imaginative revision of the medical teaching program that has attracted the attention of educators across the globe.

In the years to come, Duke University Medical Center will continue to adapt, experiment, and innovate in all aspects of its functions, basing changes upon its traditions and upon its aspirations for service to mankind everywhere.



Courses of Study and Requirements for Degrees

The New Medical Curriculum

In recent years, analysis and appraisal of the curriculum in medical schools has caused changes in many. Several factors have required these changes, important among them being the increasing scope and complexity of medicine generally, and the dissatisfaction with the sharp cleavage between basic science and clinical years. As a result of long study, the Duke University School of Medicine instituted a major revision of the curriculum beginning with the class starting in the Fall of 1966.

The aims of the present curriculum are: (1) to provide a strong academic basis for a lifetime of growth within the profession of medicine, with the development of technical competency, proficiency, and the proper attitudes peculiar to the practice of medicine as well as appreciation of the broader social and service responsibilities; (2) to establish for the first year a basic science program which will fulfill the purposes of the increasingly heterogeneous student body; (3) to offer both clinical and basic science education simultaneously; (4) to permit the student to explore his personal intellectual preferences and capabilities; (5) to allow study in depth in selected areas, either clinical or basic science; (6) to provide greater freedom of course selection and thus to encourage earlier career decision; and (7) to achieve better

integration of the medical school curriculum with residency training and the practice of medicine.

The curriculum, while offering a previously unattainable degree of flexibility to medical education and new opportunities for intellectual exploration, also makes heavy demands upon the student. It should be recognized that a medical student at Duke University School of Medicine is expected to maintain a consistent level of attainment and to demonstrate qualities of initiative and dedication to his chosen profession. A scholarly attitude to medicine that will continue throughout an entire career is an important objective of the medical school. The foundations of this attitude to learning should accompany the student when he enters.

It is expected that students will dedicate daily several hours to private study, utilizing the resources available in the Medical Center library and those provided by themselves and by other facilities of Duke University. During the University term, private study should also occupy part of each weekend.

The curriculum calls for major contributions of independent effort and individual initiative from the first day of medical school onward. Members of the medical school faculty should be regarded not as the teachers of didactic information but as guides to learning, whose opinions may be questioned in sincerity.

A student is expected to maintain at all times a professional attitude toward patients, to respect confidences and to recognize that he is the recipient of privileged information only to be discussed within the context of scholarship and in circumstances that truly contribute to the educational process or the care of the patient. This attitude involves consideration not only of speech and personal appearance but also of morality, honor, and integrity.

A special examination will be taken annually by all medical students. The examination, comprising two 3-hour papers, is administered on a single day each year. Freshmen medical students take this examination on the second day of medical school, in addition to subsequent examinations in May. The results of these examinations will be recorded in each student's record. In addition all students are required to take Part I of the National Board Examinations at the end of their first year of medical school.

Doctor of Medicine Degree

The degree of Doctor of Medicine is awarded upon approval by the faculty of Duke University to those students who have completed the curriculum of the School of Medicine to the satisfaction of the Medical School Advisory Committee, and who have demonstrated their fitness to

practice medicine by adherence to a high standard of ethical behavior and morality and paid or made satisfactory arrangements to pay all indebtedness to the University.

Course Requirements

First Year

The student will study the principles of all the basic science disciplines. Rather than mastering an encyclopedic array of facts, the purpose will be to acquire familiarity with the major principles of each subject. An introduction to clinical medicine, will be presented by the clinical services. The year will be divided into two terms, each of eighteen weeks, as follows:

Term 1	*Hours*
Anatomy	200
Biochemistry	173
Physiology	131
Human Behavior	46
Basic Neurological Sciences	91
Orientation	6
Unassigned time for study	137
	784

Term 2	*Hours*
Pathology	206
Clinico-Pathological Conferences	10
Microbiology	145
Pharmacology	115
Human Behavior	13
Introduction to Clinical Medicine	106
Genetics	32
Unassigned time for study	157
	784

Second Year

The second year will provide an exposure to clinical science disciplines permitting the student early in his career to become a participant in the care of patients. The acquired appreciation of the problems of the clinical areas and the opportunities to recognize the applications of the basic sciences should lead to a more meaningful selection of courses for the subsequent two years. The second year will be divided into five terms of

approximately seven weeks each as follows: Medicine, Obstetrics, Pediatrics, Psychiatry, and Surgery.

In addition, instruction will take place in Community Health Sciences (70 hours); Radiology (72 hours); and Emergency and Disaster Surgery (44 hours).

Third and Fourth Years

These two years will be made up of elective courses, as flexible as possible within requisite limitations. Each student will select professional advisors from the preclinical and clinical faculties. These individuals will assist the student in formulating his program for the third and fourth years. Approximately one-half the time will be spent in basic science and one-half in clinical science. Completion of the Medical Research Training Program or one of the special study programs may fulfill the requirements for basic science.

The elective courses of study offered are described under each department. The wide selection affords an opportunity for each student to design his program to satisfy best his needs in conformity with his medical future, with guidance from his advisors. Note than an asterisk placed before the course number (*ANA-206B) indicates that the course follows the timetable of the Graduate School.

As an alternative after completion of the second year, the student may enroll as a Ph.D. candidate in one of the basic sciences, earning this degree in two or three years. Then, having completed three of the four years necessary for an M.D., he may earn the M.D. degree by completing a fourth clinical year.

The third and fourth years will be divided into four terms of nine weeks each. Certain courses as noted will be offered during the summer term.

Promotion

The records of each student in the first and second years are reviewed periodically by promotion committees, which are made up of the department chairmen. The Medical School Advisory Committee acts on recommendations from these promotion committees and may:

1. Promote to the next year those students whose work is good.
2. Warn those students whose work is less than good that they must improve their scholastic endeavor.
3. Place on probation those students whose work is poor.
4. Request the resignation of any student who is considered an unpromising candidate for the degree of Doctor of Medicine.

A student wishing to appeal a decision may do so to the Dean within two weeks of his notification.

The Dean, with the advice of the Medical School Advisory Committee, reserves the right to require the withdrawal of any student at any time if, in the opinion of the majority of committee members, he should not continue his course.

Combined M.D.-Ph.D. Training Programs

Medical Scientist Training Program

General Information

The Medical Scientist Training Program is conducted under the auspices of the School of Medicine and the Graduate School and is designed for highly qualified students strongly motivated toward a career in medical sciences. The program will require six to seven years of study and will lead to both an M.D. and a Ph.D. degree. It is probably that the graduates of this Program will follow one of two broad paths. Some will embark directly on careers in teaching and research in one of the basic medical sciences, having acquired some understanding of clinical medicine in this Program. Others will enter residency programs with a background of experience in basic science which will allow them to pursue research careers in clinical medicine without the frustrations due to inadequate training in the basic medical sciences.

Eligibility

Applicants must meet the requirements for admission to both the Medical School, as a candidate for the M.D. degree, and the Graduate School, as a candidate for the Ph.D. degree. In addition to the minimum requirements established by the prior acceptance into the Medical School and the Graduate School, additional course work in science and mathematics as well as previous research experience will count heavily in the selection of candidates.

Financial Support

Those students funded will be offered a traineeship award (MSP trainee) which will include a stipend plus a full tuition allowance. The stipend levels are equivalent to the current U.S. Public Health Service predoctoral and postdoctoral fellowships, and an MSP trainee will be supported until he has completed both degrees, as long as his progress is satisfactory. These stipends include a dependency allowance of $500.00 per dependent. The stipend levels for a seven-year program begin at $2,400.00 with yearly increments to $6,000.00 per year, plus any dependency allowance.

Candidates may also participate as students in the Medical Scientist Training Program without receiving one of the special traineeship awards. Details of the alternate awards will be discussed with candidates on an individual basis.

The Training Program

This program has been designed to offer the student great latitude in the selection of his course material, but the basic requirements will be those described in the following example of a typical program. The first two academic years are composed of the core basic science year and the core clinical science year of the new curriculum for medical students at Duke University. At the completion of the second year, the student enters the graduate program. Following the completion of the requirements for the Ph.D., the student needs one more academic year of clinical training to complete the requirements for the M.D. degree.

Year 1—Core Basic Science Year. This year is made up of material in the basic sciences of anatomy, biochemistry, genetics, microbiology, pathology, pharmacology, and physiology, in addition to an introduction to clinical methods. The students in the Medical Scientist Training Program will work together throughout this first year. At the end of this first year, the student will be familiar with each of the basic sciences and will be in a good position to select his field of graduate study. The summer following the first year can be used in one of two ways: one, the student may spend this time taking additional background courses in mathematics, chemistry, or other fundamental sciences; or two, he may elect to begin his graduate research.

Year 2—Core Clinical Science Year. A comprehensive approach to medicine, oriented to the patient as a whole, will be the basis for the second year curriculum for the medical scientist. During this year, which represents the student's first introduction to clinical medicine, the focus will be upon the total human biological unit rather than upon separate organ systems. The curriculum will be "vertically" integrated, multidisciplinary, and interdepartmental. Stress will be placed upon the continuity of biological processes—from conception through birth, development, and maturation to senescence and death. Special consideration will be given to the pattern of this developmental sequence in the individual, and to the changes in the pattern determined by genetic composition and by alterations brought about through the action of the particular environment in which the patient lives.

During this year the trainee will be taught primarily by one specific group of teacher-investigators from the clinical departments. The program will consist of a special series of seminars and demonstrations plus clinical experience. The clinical experience will parallel the seminar series insofar as possible. For convenience in description, these clinical experiences have been roughly divided into periods. In practice, the

entire year will be organized as a unit both in the seminar and the clinical work.

The initial six weeks will be devoted to obstetrics and gynecology, with its considerations of the adult woman, sterility and infertility, conception, maternity, and birth. Two weeks will then be given to a combined interdisciplinary effort between the departments of Pediatrics and Obstetrics in the area of maternal fetal interaction, birth, and the perinatal period.

The next six weeks will be devoted to pediatrics, with emphasis upon normal development and the aberrations caused by disease. Time will then be allotted to a combined effort of all departments in the area of adolescence, including such social problems as juvenile delinquency.

Medicine, Surgery, and Psychiatry will cooperate in the teaching program during the last 21 weeks of the year. Selected patients from these services will be maintained on a "mixed" ward to facilitate and improve this phase of the student's clinical experience. The different types of patients also provide an excellent opportunity for psychologists, social workers, and others to demonstrate the importance of their respective disciplines and attitudes for these patients. Finally, during the terminal weeks of the year, the student will be given the opportunity to appreciate the problems of senescence and the impact of chronic disease upon the individual and his family.

Years 3, 4, and 5—The Graduate Years. During the third, fourth, and fifth, and, if necessary, the sixth year of the Program, the student will pursue graduate study in order to satisfy the requirements for the Ph.D. degree. These requirements include: (1) completion of necessary coursework, (2) adequate performance in the preliminary examination, (3) original research suitable for a dissertation, and (4) successful defense of the thesis in the final examination. Detailed description of other general requirements for the Ph.D. degree, e.g., competence in two foreign languages are set forth in the *Bulletin of the Graduate School.* The standards of performance during this period will be determined by the individual departments concerned. Further details concerning the individual departments may be obtained by writing to the Director of Graduate Studies in a given department.

The graduate curriculum of each student will be worked out in consultation with the Director of Graduate Studies of the department in which the student chooses to work and will require the approval of the Medical Scientist Training Committee. Since most of the ordering ideas and experimental techniques of all of the medical sciences derive from mathematics and the physical sciences, it is essential to insure that all students in the program have an adequate grounding in these subjects. Because of the close working relationship and geographical proximity of the medical sciences and physical sciences departments at Duke, the setting is unusually favorable for the achievement of that goal.

If the student has not completed a study of differential and integral calculus, including one course in differential equations, he will be required to do so early in his graduate career. This also holds for students who have not had a rigorous course in physical chemistry. In addition to the aforesaid courses which are recommended for all students in the Program, selected students, depending upon their interest and talents, will be encouraged to take additional course work in the departments of Mathematics, Physics, Chemistry, and Electrical Engineering.

Descriptions of graduate courses in the departments of Anatomy, Pathology, Microbiology, Biochemistry-Genetics, and Physiology and Pharmacology are listed in the *Bulletin of the Graduate School.* Students will be encouraged to select courses which are relevant to their own developing individual interests rather than according to a prescribed program which is applied to all students in a given discipline. It is our view that such range, flexibility, and freedom are the essence of graduate education. The original research and dissertation of each student will be supervised by a faculty advisor chosen by the student in consultation with the director of graduate studies in his department. The faculty advisor is the chairman of the student's supervisory committee which must consist of at least three members of the major department. This committee generally administers preliminary (before commencing original research) and final (after completion of dissertation) examinations for the student.

Terminal Year—An Elective Year in Clinical Science. The student will be assigned an advisor from the clinical department in which he is most interested. Together they would construct a highly individualized training plan for that particular student and one that would have a major emphasis relative to the chosen clinical area as well as a minor emphasis in one other field. The integration of research and clinical experience will be carried out in such a way that the student's research competence will be facilitated rather than lost. Therefore, this year will be planned with due regard to the trainee's proposed career in research. This year would give the trainees in the Medical Scientist Training Program further training in clinical medicine and would complement the second or core clinical year, so that the trainee's total clinical experience would approximate that now given in the regular clinical years of medical school (the third and fourth years in the majority of schools). It should be noted that since these students will receive the M.D. degree upon completion of this final year, great care will be taken by the faculty to insure that the student will be well grounded in the present day concepts of patient care.

Parenthetically, it is hoped that the student's last year would give the student an experience which will not be repeated later during his internship. Rather it should serve to complement these phases of his training. Ideally, the future surgeon, for example, should be exposed to fields other than surgery, since he will receive intensive training in surgery during

his residency. The student usually will be tempted to enter immediately upon the area of his primary interest, e.g., surgery. It is partially to offset this tendency that it is stipulated that a student should take a major and minor subject and that the program for the final year should be arranged through consultation by the student with his faculty advisor.

Application and Admission Procedures

1. Complete the application form for the Duke University School of Medicine.
2. Complete the application form for the Medical Scientist Training Program.
3. After preliminary screening, selected candidates will be asked to submit an application to the Graduate School.
4. A member of the Medical Scientist Training Committee will be available to furnish further information to applicants interviewed at Duke. Applicants will be notified of their status not later than January 10.

Further information can be obtained by writing to: Associate Director, Medical Scientist Training Program, Department of Biochemistry, Duke University Medical Center, Durham, North Carolina 27706.

Medical Historian Training Program

General Information

The Medical Historian Training Program is conducted under the auspices of the School of Medicine and the Graduate School and is supported by the Josiah Macy, Jr. Foundation. It is constructed to provide professionally trained medical historians to fill some of the shortages of teachers and research workers that exist in universities throughout this country, and it is intended to provide a unique training opportunity for a small number of highly selected students who anticipate careers in the fields of medicine and medical history. A minimum of six years of graduate study is required, with successful completion leading to both the Doctor of Medicine and Doctor of Philosophy degrees. It is anticipated that graduates of the program will undertake at least one year in postgraduate medical training before embarking on careers in the history of medicine. Graduates are expected to devote their major career efforts to teaching and scholarly activities in the field of the history of medicine, with minor involvement in clinical responsibilities, patient care, or biomedical laboratory research.

Eligibility

Applicants must meet the requirements for admission to both the School of Medicine as a candidate for the M.D. degree and the Graduate

School as a candidate for the Ph.D. degree in the Department of History. Applications will be accepted from candidates who wish to enter the program in the first year of medical studies.

In addition to the minimum requirements established by the School of Medicine and the Graduate School, additional course work in history and the history and philosophy of science will count heavily in the selection of candidates.

Financial Support

Students accepted will be offered a traineeship award which includes a stipend and a full tuition allowance.

The award, which will support the trainee throughout a six-year combined program as long as his progress is good, includes allowances of $500 per annum for each dependent and limited travel expenses to attend meetings in the history of medicine. Stipend levels (exclusive of allowances) begin at $2400 per year, and annual increments raise this to a maximum of $5500.

The Training Program

The program has been designed to offer the student a great latitude in the selection of his course material, but the basic requirements will be those described in the following example of a typical program. During the first two academic years, full-time courses in the School of Medicine will be followed. The first year comprises the "core" basic science year and the second, the "core" clinical science year. At the end of the second year the student enters the graduate program.

Typically, a candidate for the Ph.D. degree in history devotes approximately two full years to the completion of his required courses, work in seminars, writing a master's thesis, and in preparatory study for his preliminary or qualifying examinations. The actual length of time needed to earn the Ph.D. degree depends upon the number of months beyond this two-year period a candidate finds it necessary to devote to research and the writing of his dissertation. The candidate will pursue these studies in the Department of History during the third and fourth academic years of the program.

In the fifth and sixth years, the trainee will return to medical studies and follow the very flexible elective program offered in the third and fourth years of the curriculum of the School of Medicine. During this time a total of up to one quarter can be made available for completing the Ph.D. degree in history. Elective credit for this period will be accepted toward completing the requirements for the M.D. degree.

The original research and dissertation of each student will be supervised by a faculty advisor chosen by the student in consultation with the director of graduate studies in the Department of History. It is not

required that the faculty advisor be a member of the department in which the student will take his degree; therefore, it is possible for a student to undertake dissertation work at another institution in this country or abroad. If the personal interests or required research of the individual student demand work away from Duke for any considerable period of time, the anticipated schedule for completion of the double-degree program may be somewhat extended; but it is anticipated that a total of six years will normally prove adequate.

Following the sequence described above, a candidate could complete the requirements for the A.M. degree in history by the end of the fourth academic year of the program. By the end of his sixth year, he could receive both the M.D. and Ph.D. degrees.

Students in the program will be expected to devote the summer following completion of their first year in medical school working in some aspect of the history of medicine to prepare for the regular course work in history that will begin in the third academic year of the program.

Application and Admission Procedure

1. Complete the application form for the Duke University School of Medicine.
2. After preliminary screening, selected candidates will be asked to submit an application to the Graduate School for admission to the Department of History.
3. Customarily, the selection of the trainees will be made from a group of finalists who will be interviewed at Duke University. Applicants will be notified of their status not later than January 10.
   Application forms and further information may be obtained by writing to the Associate Director, Medical Historian Training Program, Box 3005, Duke University Medical Center, Durham, North Carolina 27706.

Medical Undergraduate Special Training and Study Programs

With the objective of affording special opportunities to medical students having interests in particular areas of the biomedical sciences, a series of integrated, interdisciplinary training and study programs have been constructed. Participation in one or other of these programs is an alternative available to medical students in the third and fourth years of their studies. These programs may be supplemented with additional work taken through the medium of the departmental electives described in the section Courses of Instruction.

Resources for Study

Medical Center Library

The Medical Center Library, located in the Davison Building, attempts to provide all services and collections necessary to further educational, research, and clinical activities in the medical field. Extensive reference and bibliographical services are provided. The collection exceeds 90,000 volumes, and 1700 periodicals are received currently. Director, G. S. T. Cavanagh; Associate Director, W. Bird; C. Tatum, M. Jones, M. A. Brown, E. Wheeler, J. Woodburn, K. Kruse, P. Tavernise, M. J. Crutchfield.

The Trent Collection in the history of medicine is an unusually fine one, rich in manuscripts and rare books, and providing opportunity for study and research as well as casual reading in the field. Curator, G. S. T. Cavanagh, Assistant Curator, Susan C. Smith.

Duke Hospital

Duke Hospital is an integral part of the Medical Center and currently has 800 beds and 23 bassinets. The hospital performs the dual functions of professional education and patient care. Comprehensive diagnostic and treatment facilities are provided. Different levels of patient care are

provided, ranging from the intensive nursing unit, through the conventional nursing sections to a minimal care unit. Private, semi-private, and ward accommodations are available. Over 20,000 patients are admitted each year. The approximate daily census by service is as follows: Surgery, including the surgical subspecialties, 310, Medicine, 205; Pediatrics, 55; Psychiatry, 50; and Obstetrics-Gynecology, 50. Surgical facilities include eighteen operating rooms where over 15,000 surgical procedures are performed annually. Four obstetrical delivery rooms are maintained. Special diagnostic and treatment units are also available such as the recovery room, cardiac catheterization laboratory, and hyperbaric oxygenation chamber.

The outpatient services comprise the public clinics, the private patient clinics, the employee health office, and the emergency service. Over 250,000 visits are made each year to these units. Close working relationships between Duke Hospital and various outside health agencies enhance continued care of the patients.

The clinical faculty of the Duke University School of Medicine forms the medical staff of Duke Hospital. Thus this group not only participates in both undergraduate and graduate medical education but also in active medical practice within the hospital and the private diagnostic clinics. Duke Hospital is approved for internship and residency training by the Council on Medical Education and Hospitals of the American Medical Association and conducts an active educational program involving approximately 340 housestaff members. The hospital is fully accredited by the Joint Commission on Accreditation of Hospitals.

Veterans Hospital

The Durham Veterans Administration Hospital is located within walking distance of the School of Medicine. The full-time professional staff are all members of the faculty of Duke University School of Medicine. This 489 bed general hospital provides an opportunity for closely integrated student teaching and housestaff training.

Teaching and Research Facilities

The major preclinical teaching facilities are the Central Teaching Laboratories in the Davison Building. Additional preclinical teaching facilities are located in the Bell Building and in the Nanaline H. Duke Medical Sciences Building. Classrooms and laboratories for clinical teaching are located in hospital and clinic areas of the medical center. Extensive research facilities are located in the Davison, Clinical Research I,

Clinical Research II, Gerontology, William B. Bell, and Nanaline H. Duke Medical Sciences Buildings.

Audiovisual Education

The Division of Audiovisual Education is structured to serve the Medical Center in three ways: (1) to produce all types of audiovisual materials; (2) to inform the faculty and students concerning audiovisual materials and methods; and (3) to provide indirect and direct assistance to the faculty who wish to use audiovisual media in their teaching, research, and patient care endeavors. There are three subdivisions: the Medical Art Facility, the Medical Photography Facility, and the Central Television Facility.

The Medical Art Facility provides illustrations produced by various art methods and techniques of subjects seen or unseen and theoretical. Services rendered include: medical illustrations, schematic and mechanical drawings, diagrams, charts, graphs, designs, lettering, signs, casts, models and exhibits, and other forms of illustrations. The production of facial prostheses and instruction in the use of opaque cosmetics are performed by the Facial Prosthetics Laboratory, a subsection of Medical Art.

The Medical Photography Facility is staffed and equipped to provide all photographs needed for teaching, in research, and in the diagnosis and treatment of patients. For example, photographs of patients may include such fine details as the patterns of vessels on the retina, or those of the skin as they are revealed by infrared light. Photographs are used by the medical staff as records of the patients' responses to treatment, as well as in teaching. Surgical and other procedures are recorded in motion pictures to be used for instruction and to enhance the patient record.

The Central Television Facility provides service directed toward the instruction, research, and patient care programs of the Medical Center. The television system is designed to enhance the multimedia approach for instruction. During the past several years, a collection of videotaped material has been produced as cores for teaching presentations. The television control center is capable of interdigitation of all audio and video signals originating from TV cameras, a motion picture-opaque-slide pick-up device, and video tape recorders. Studio and mobile cameras, monitors, and the wide-screen TV projector may be used in twenty-five specific locations throughout the Medical Center. These locations include all major classrooms and student laboratories.

Although no formalized study in medical art, medical photography, and medical television is provided, individual training programs are available for those who wish to pursue a career in the medical audiovisual field. *Director S. Agnello, E. Clark, W. Williams, M. Wayda*

Student Life

Living Accommodations*

Duke University provides living accommodations for graduate-level resident students, both married and unmarried.

Rooms in residence halls, spaces in Town House Apartments, or other rental units may be reserved by single applicants only if they have been accepted by the Medical School and after the required $25 room or security deposit has been paid to the Duke University Bursar.

Assignment priority is established by the date of receipt of completed applications with deposits in the Office of the Director of Housing Management.

Residence Hall space available for single graduate and professional students totals 197 beds for men and 97 beds for women. Facilities for single graduate and professional students are located on the northern side of the campus near the Medical Center.

Town House Apartments, located between East and West campuses, include 30 two bedroom units, each furnished for three graduate women students. Two students occupy the master bedroom, the third occupies a smaller bedroom. A living room, kitchen, and one and a half baths complete these attractive living units.

For married graduate and professional students, Duke University has

*Information pertaining to residence halls and apartments is subject to change prior to September, 1969.

98 one bedroom luxury apartments under lease for a period of three years. An additional 104 two and three bedroom apartments will be under lease for one year to meet student requirements until a new Married Student Housing complex is ready for occupancy about mid-summer of 1970. All units are within walking distance of the campus.

Regulations governing room and security deposits and occupancy of rooms and apartments will be provided by the Office of Housing Management at the time application forms are forwarded to accepted students. Occupants within each type of housing are expected to comply with the appropriate regulations.

Application forms and detailed information on graduate housing will be mailed when the Graduate School has notified the Office of Housing Management of official acceptance of the student. Single women may express a choice for the type of housing desired. Complete applications for rooms and apartments are to be returned, with required deposits, to the Office of Housing Management, Duke Station, Duke University, Durham, N.C. 27706.

All requests for rates and other information for apartment-type accommodations should be addressed to the Director of Housing Management, Duke University. Specific information will be supplied as available.

Dining Facilities

Several dining facilities, located near the Medical Center, are available to students in the School of Medicine.

In the Duke University Union Building, there are two cafeterias offering multiple-choice menus and a dining area, the Oak Room, which offers full meals and *á la carte* items.

In the Men's Graduate Center, there is another cafeteria with multiple-choice menus and the Coffee Lounge, where sodas and sandwiches are served from 11:30 A.M. to 11:00 P.M. (See section on Dining Facilities in chapter "Financial Information" for approximate food costs.)

Services Available

Student Advisory Program

The development of an informal and cordial student-faculty relationship is an important objective of the Duke University School of Medicine. As a means of achieving this objective, the Student Advisory Program was established.

The Student Advisory Program provides each medical student, from the time he enters as a freshman until the time he graduates as a physician, with a single faculty member whose special interest he becomes. Each

student joins with four others in constituting a group for which their "personal" faculty advisor has responsibility.

Through informal meetings, discussions, and occasional social gatherings, an atmosphere of mutual confidence and friendliness becomes established, a relationship that often extends beyond graduation and reaches far into the future.

Student Medical Care

With the exceptions to be noted, full medical, psychiatric, and surgical care is furnished to all regularly matriculated medical students of the University while they are on the University campus if they have paid the quarterly general fee. This service is under the direction of the physician-in-charge with the cooperation of the staff of the Duke University Medical Center. It includes hospitalization (limited to thirty days), professional care, drugs, dressings, X-ray studies, and ward but not special nursing. A charge for board is made at the same rate as in the University dining halls. Refraction of eyes and treatment of teeth and of all chronic and pre-existing conditions, such as diseased tonsils, hernia, elective surgery, chronic skin conditions, and endocrine disturbances, or accidents or illnesses occurring during vacations or while off the campus are not included in this service. The cost of any necessary braces and orthopaedic appliances, as well as of special nursing, must be borne by the patient. If the student has insurance providing hospitalization, surgical, or medical benefits, the benefits may be applied to the cost of his medical care.

In recognition of the unique health needs of medical students, whose activities bring them into far greater contact with communicable disease than the average university student, a special health program for medical students has been established. The program will provide for a careful physical examination, chest x-ray, blood and urine examination, and necessary immunizations at the beginning of the freshman year. In addition, chest X-rays will be repeated at appropriate intervals during the entire four years of medical school.

Since these services are in addition to those available through the Student Health Service, a special fee of $25.00 will be required of each medical student to cover the extra cost over the four-year period. *R. Portwood, Director of Student Health*

Student and Professional Organizations

Davison Society

The Davison Society is a composite of the former Student Government Association and the local chapter of the Student American Medical As-

sociation. All students in the medical center working toward the degree of Doctor of Medicine are members of the Society with membership in SAMA being optional. The Davison Society Council consists of twenty-five elected students including an executive council and individual class officers. The responsibilities of the Society include freshman orientation, continuation of the Big Brother program for freshmen, publication of the yearbook for the medical center, publication of a directory of students and a listing of research opportunities for medical students, participation in the Davison Scholar Program, and the organization of extracurricular educational and social events and serving as liason between students and faculty. With the curriculum change at Duke the Society has worked responsibly with the faculty in curriculum planning and evaluation. Another area of student concern and activity is that of the health-care delivery system in the United States.

A major responsibility of the Davison Society is the preservation of the Honor Code which has been a proud tradition at Duke University School of Medicine for many years. The prevailing opinion has been that students must act with integrity while in medical school in order to cope with the much greater demands and responsibilities of the practice of medicine. Each student on or before entering Duke University School of Medicine is required to sign a statement expressing his understanding and familiarity with the honor system and his willingness to abide by its provisions. The Davison Society serves as an Honor Council to try any infringements of the Honor Code. The Dean's committee of students, faculty, and administration serves to recommend the disposition of a student found guilty by the Honor Council.

Alpha Omega Alpha

Alpha Omega Alpha Honorary Medical Fraternity was organized nationally in 1902, and the Duke Chapter (North Carolina Alpha) was chartered in 1931. The aims of the society are the promotion of scholarship and research in medical schools, the encouragement of high standards of character and conduct among students and graduates, and the recognition of high attainment in medical science, practice, and related fields. Student members are elected from among those whose scholastic achievement places them in the upper twenty-five percent of the class and who have further demonstrated leadership and promise of future achievement. Not more than one-sixth of any class shall be elected to membership, and of these only one-third may be elected in the junior year. Alumni, faculty, and honorary membership may also be conferred upon certain physicians who have distinguished themselves in the various areas of medical teaching, research, and practice.

The Christian Medical Society

The Christian Medical Society is an organization of medical students

and graduate physicians who are interested in relating Christian faith to the practice of medicine. Meetings encourage the recognition of the spiritual and moral as well as the physical responsibilities of the physician.

Duke SAMA Chapter

Since the merger between the Student Government Association and SAMA to form the Davison Society, the local activities of the Duke SAMA Chapter no longer constitute a separate program of events. Approximately 75 percent of the medical student body hold membership in SAMA which is an independent national organization representing the opinions and desires of more than 60,000 medical students, interns, and residents throughout the country.

Local SAMA members represent Duke University School of Medicine at regional and national meetings and conventions. A summer externship program for medical students is administered by appointed members of the Duke chapter.

The organization has earned a reputation on the national level for its interest in medical education, the delivery of health care, international foreign medical student exchange programs, hospital employment, internship evaluation, and its call for reforms in many outdated aspects of American medicine. SAMA provides benefit plans for students and maintains communication with other national student professional organizations.

The Duke Chapter has always been very active in the national organization with a long list of committee chairmen, standing committeemen, and ad hoc committee members.

The Engel Society

The Engel Society is an organization composed of a small group of medical students and faculty which has as its principal objective the promotion of the exchange of ideas and experiences between students and faculty. The Society is named for the late Dr. Frank L. Engel, who devoted much of his professional life to teaching and to helping medical students at Duke find their own niche in professional life. Six dinner meetings are held each academic year. These meetings provide a forum for informal discussion and an opportunity for the members to hear papers presented on topics of general interest to those in the medical profession. The student membership consists of six members of the junior and six members of the senior medical classes. Each year six members of the rising junior class are invited to replace the six graduating seniors. Students chosen for membership possess not only the capability but the desire for scholarship in medicine in its broadest sense.

Ganglion

Ganglion, the Neuroscience Society of Duke Medical School, is one of the youngest of Duke's medical societies. Organized last year, its purpose is to bring together medical students interested in neuroscience as a career. Its members have interests in psychiatry, neurology, neurosurgery, and allied areas. Ganglion was created by a small group of students to provide a means of contact with members of Duke's neuroscience faculty, and with major figures in the field of neuroscience. Guest speakers are invited to at least six of the society's dinner meetings each year, and discussions center not only around guests' scientific interests but also their personal philosophies, opinions, and ideas outside of science.

Duke University Medical Alumni

The Duke Medical Alumni now number over 4,800. Membership includes all graduates of the Medical School, past and present faculty, and all past and present house-officers of Duke Hospital (including those who are not Duke graduates). Associate membership is held by alumni of the following: Hospital Administration, Dietetics, Social Service, Laboratory Technique, X-Ray Technology, Physical and Occupational Therapy, Medical Record Library, and Medical Art and Illustration.

Officers

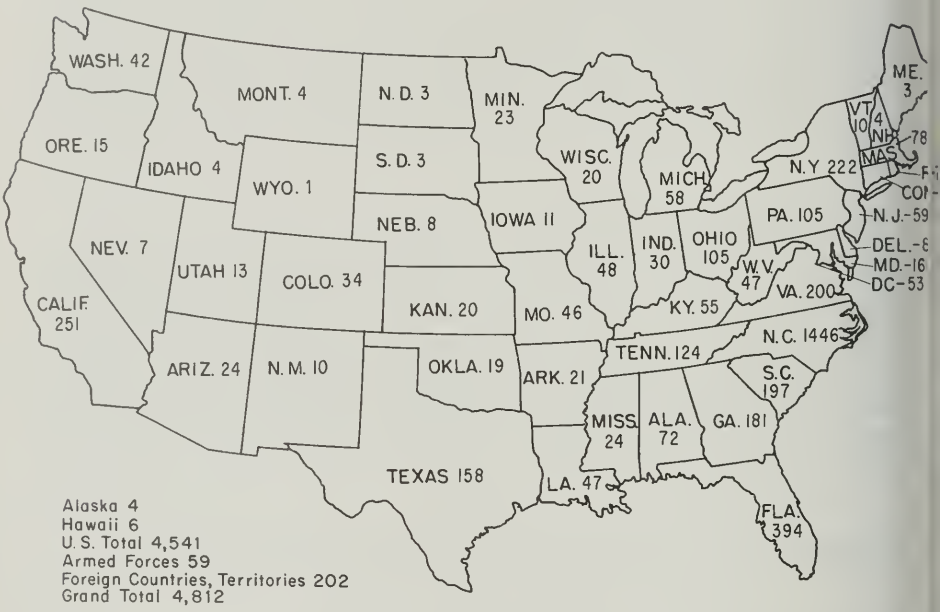
President:	Dr. John P. McGovern BSM '43, M.D. '45 6655 Travis Street Houston, Texas 77025
Vice-President:	Dr. Benjamin Vatz M.D. '45 1106 Hammel Road Greensboro, North Carolina 27408
Secretary-Treasurer:	Dr. Jay M. Arena M.D. '32 1403 Woodburn Road Durham, North Carolina 27705

A newsletter is sent to all the members in January, April, July, and October of each year. Reunions are held every year in Durham; the next is planned for November 6, 7, 8, 1969. Alumni groups have been formed in several states. Alumni luncheons or dinners are held during the following meetings: The American Medical Association, The Southern Medical Association, The North Carolina Medical Society, and the American Academy of Pediatrics.

The map shows states in which Duke Medical Alumni are located and the number in each state. Figures include those who received the M.D. degree from Duke and also those who have served a year or more on the

housestaff. A total of 4,551 physicians are distributed throughout the United States.

There are also 202 Duke Medical Alumni serving in the territories of the United States and in foreign countries, and 59 alumni are on duty in the Armed Forces.



Conduct of Students

Duke University expects and will require of all its students continuing loyal cooperation in developing and maintaining high standards of scholarship and conduct.

The University wishes to emphasize its policy that all students are subject to the rules and regulations of the University as currently in effect, or from time to time, are put into effect by the appropriate authorities of the University.

Any student, in accepting admission, indicates his willingness to subscribe to and be governed by these rules and regulations and acknowledges the right of the University to take such disciplinary action, including suspension and/or expulsion, as may be deemed appropriate, for failure to abide by such rules and regulations or for conduct adjudged unsatisfactory or detrimental to the University.

Financial Information

Fees and Expenses

Tuition and Fees

The following table represents an estimate of a student's necessary expenses for the normal academic year of the School of Medicine. The total of these figures suggests a basic minimum budget of approximately $3,000. Allowances for recreation, travel, clothing, and other miscellaneous items must be added to this estimate. These, of course, will vary considerably, depending upon the needs and tastes of the individual.

Tuition and fees		$2050.00
Board (Cafeteria estimate)		600.00
Room*		325.00
		495.00
Books†		90.00
		275.00
Medical Student Health Program‡		25.00

*University Housing.

†Anticipated annual cost of books: first year, $275; second year, $135; third and fourth years, $90.

‡For details of this program, see page 20.

Instruments and insurance*	197.50
Student Government (Davison Society) Subscription†	10.00

A pro-rata part of the total fees is payable by the Friday preceding each applicable term. A fine of $5.00 is charged for late registration after this time. No credit will be given for any term in which the tuition has not been paid, whether the work has been done here or elsewhere.

A student is not eligible to attend classes or to make use of University facilities if he is in default of payment of monies owed to the University.

Bills for fees and tuition are rendered by the Office of the Bursar, Duke University. However, nonreceipt of a bill does not exonerate the student from payment or from assessment of fine for late registration.

It is not advisable for students to attempt outside work to defray their expenses during the academic year.‡

See section on Housing in this chapter for further information.

Living Accommodations

Housing

Rooms in residence halls are normally rented for the academic year, but for no period less than one semester or specified term. A limited number of single rooms are usually reserved for returning students.

Each student assigned to the Town House Apartments is currently charged $495.00 for the academic year on the basis of three individuals to an apartment. Utility charges are included in these rates. Rental rates for space in double residence hall rooms range from $325 to $355 for the academic year.

Current rates for apartment units for married students range from $126 per month (including utility allowances) for an unfurnished one bedroom unit to $175 per month (without utilities) for a partially furnished three bedroom unit.

No refund on residence hall room rent or the rent for spaces in Town House Apartments is made to students who withdraw after the date of registration, except for those who involuntarily withdraw to enter the armed services. Such refunds will be made in accordance with the University's established schedules.

Married Students who desire assignment to apartments will be offered

*Microscope, sphygmomanometer, ophthalmoscope, otoscope, and other equipment which are required of each student and which must conform to rigid standards may be purchased from the University by means of a Student Equipment Time Payment Plan.

†Mandatory fee.

‡Wives of medical students desiring employment may secure information from the Duke Medical Center Personnel Office or the Duke University Personnel Office.

leases for specific periods. Cancellation procedures are stipulated in the agreements.

Applications

Students officially accepted for admission to the School of Medicine will be requested to complete a housing information form to be returned to the Director of Admissions, Duke University School of Medicine, Durham, North Carolina.

On receipt of the completed forms, students will be sent appropriate literature, housing application forms, and instructions. The completed housing application forms and required $25.00 deposits must then be sent to the Director of Housing Management, Duke University, Durham, North Carolina.

Confirmation of room and apartment assignments will be forwarded to the applicants as soon as practical, usually about one month before occupancy. (See section on Housing Deposit and Refund on page 28.)

Residence Hall and Town House Apartment Regulations

Rooms and apartments are rented for the academic year. Room and apartment rentals for less than one term require special arrangements.

A resident student in order to retain his room or apartment for the succeeding academic year must make application at the Office of the Housing Bureau for confirmation of his reservation.

No refund of room or apartment rent for a specified medical term will be made after the day of registration for that term except for students who involuntarily withdraw to enter the armed services. Such refunds will be made in accordance with the University's established schedule. Students desiring to cancel a residence hall reservation must provide written notice to the Office of Housing Management by August 1 for cancellation of a reservation for the fall semester and not later than ten days prior to the beginning of any subsequent medical term for a cancellation of a reservation for the next medical term. Such notice is essential to obtain refund of both room rent and the $25.00 room deposit. Refer to Medical School Calendar for details on dates of specified terms for each class.

The authorities of the University do not assume responsibility for persons selected as roommates, and each student is urged to select his roommate when reserving a room or apartment. Any student who occupies a double room without a roommate will be given written notice from the Housing Office to obtain a roommate or he may be required to pay the rental consideration for the whole room or apartment. Similar notification will be sent to occupants of apartments where vacancies occur.

Regulations governing the occupancy of rooms or apartments will be

supplied by the Office of Housing Management to those students who make application for housing. Occupants are expected to abide by these regulations.

Any exchange of rooms or apartments must be made at the Office of Housing Management. Persons who exchange rooms or apartments without the approval of the Office of Housing Management will be subject to the charge for both apartment spaces.

Housing Deposit and Refund. A $25.00 deposit is required of each applicant before a housing reservation is made. This initial deposit serves as a continuing deposit for successive terms.

Refunds. The room deposit will be refunded under the following conditions:

1. Within thirty days after the student has been graduated.
2. Upon withdrawal from the University residence halls by students enrolled on the semester basis, provided written notice is received by the Office of Housing Management by August 1, for cancellation of a reservation for the fall semester, and not later than January 15, for the spring semester.
3. Upon withdrawal from the University residence halls by students enrolled on the basis of the medical term, provided written notice is received by the Office of Housing Management by August 1, for cancellation of a reservation for the term beginning in September, and not later than ten (10) days prior to the beginning of any subsequent medical term within the academic year.

The deposit required for apartments operated by Duke University is refunded under similar circumstances; however, apartments are rented on a lease basis.

No refund will be made until the occupant has checked out of his room or apartment through the Office of Housing Management and has settled his account with the Bursar.

Dining Facilities

If a student dines on the Duke University campuses, the cost of food for the academic year will average approximately $600.00; however, this will vary depending upon the tastes of the individual.

The prices of food are the same in each of the University-operated dining facilities.

Motor Vehicle Registration

Each motor vehicle operated on the Duke University campuses by students enrolled in the School of Medicine must be registered at 08 Social

Science Building within five calendar days after operation on the campuses begins, and thereafter must display the proper registration emblem.

Resident students must pay an annual parking fee of $30.00 for each motor vehicle or $10.00 for each motorcycle, motorbike, or motor scooter.

To register a vehicle, the student must present the following documents: (1) State vehicle registration certificate; (2) valid driver's license; and (3) satisfactory evidence of automobile liability insurance as required by North Carolina law—$10,000 per person, $20,000 per accident for personal injuries, and $5,000 property damage.

Parking, traffic, and safety regulations will be given each student who registers his vehicle. Students are expected to abide by these regulations.

Financial Aid

Duke University School of Medicine makes financial assistance available to students in the form of scholarships, small loan funds, U.S. Health Professions Student Loans, summer work-study employment, fellowships, and cash awards. Assistance is granted on the basis of merit, demonstrated financial need, or a combination of both.

Financial Assistance to Incoming Freshmen

All applicants for admission to the School of Medicine are considered for four year scholarships. Application forms are mailed to accepted students by the Office of Admissions.

Financial Assistance to Upperclassmen

Should a medical student experience unforseen financial difficulties while he is in school he may seek assistance through the Office of Medical Students' Loans and Scholarships. Scholarships are not generally awarded upperclassmen until the applicant has incurred considerable educational indebtedness.

Scholarships—Fellowships

Where not stated, specific information concerning these may be obtained from the Office of the Coordinator of Medical Students' Loans and Scholarships.

The Avalon Foundation Scholarships are non-refundable grants assigned on the basis of financial need and scholastic attainment.

The Mary Duke Biddle Foundation Scholarships are awarded to academically distinguished medical students who need financial assistance. A scholarship may cover up to full tuition costs.

The Thomas C. Bost Foundation Scholarship is assigned on the basis of merit and need in an amount equal to tuition.

The Medical Faculty Wives Scholarship is awarded to a worthy student for four years in the amount of $1000 per year.

The Pfizer Scholarship, offered by Pfizer Laboratories, a division of Charles Pfizer & Co., Inc., is an award of $1000 granted to a student selected on the basis of merit and need.

The Charles Alva Strickland Memorial Fund Scholarships may cover up to full tuition costs. This scholarship is renewed for each year after the first year. Merit and need are taken into consideration.

U. S. Public Health Scholarships are available to U. S. citizens who cannot pursue the required studies without such aid. Demonstrated financial need is required in order to be considered for this scholarship up to $2500.

The Dr. Hillory M. Wilder Scholarship Fund covers full tuition for each of four years and is awarded on the basis of merit and need.

The Francis and Elizabeth Swett Scholarships are awarded to entering students on the basis of outstanding need and merit. The scholarships are awarded on a one-year basis, renewable if funds permit or if need still exists and academic excellence is maintained.

Student Research Fellowships are available as part of a program designed to encourage the medical student to participate in research. Summer fellowships carry a stipend of $200.00 per month. These fellowships enable selected students, after completion of their first year, to participate in research during a summer vacation or other free time. Special fellowships in nutrition, ophthalmology, allergy, and other fields are also available. Opportunities also exist for a student to engage in research for an entire year during which time he temporarily discontinues his medical course. These post-sophomore research fellowships carry a stipend of $3,200 per year plus an allowance for dependents and tuition expenses. In special circumstances these fellowships are tenable at institutions other than Duke Medical Center and outside the United States. Information may be obtained from the Associate Dean for Undergraduate Medical Education.

Student Awards and Research Fellowships

The Wilbur C. Davison Scholarship Award. This award was instituted to enable a medical student to widen his experience through clinical study outside of the United States. One award of $500 is made each year. Information may be obtained from the Associate Dean for Undergraduate Medical Education.

The Trent Prize in the History of Medicine. The Trent Prize was established by Mrs. Mary Trent Semans in memory of the late Dr. Josiah C. Trent to encourage students to undertake independent work in the

history of medicine and to utilize the resources of the Trent Collection.

An annual award of $100.00 is offered for the best essay by a Duke medical student on any topic in the history of medical and allied sciences. An additional book award will be made to each entry of merit. Students are invited to discuss possible topics with the Curators of the Trent Collection. Finished papers must be submitted to Mr. G. S. T. Cavanagh, Medical Center Library, by October 31 of each year.

Lange Medical Publications Awards. Textbooks and certificates are awarded to the Senior Class Valedictorian and the top ranking woman graduate. Textbooks are also awarded to the top two students in each of the upper three classes and to the president and representatives of the first year class.

C. V. Mosby Awards. Gift certificates for the purchase of books are awarded annually to five top students in the graduating class.

American Medical Women's Association Awards. An award of $100.00 and a citation are presented to the woman medical student who graduates at the top of her class. An Honorable Mention citation is presented to all women students who graduate within the top ten per cent of their class.

Smith Kline & French Award for Medical Writing. An award of $100.00 is made annually to the medical student who submits the most meritorious essay describing a piece of research. The paper must show that particular attention has been given to clarity of writing, definition of objectives, presentation of results, and bibliography in correct form. Papers must be submitted to the Associate Dean for Undergraduate Medical Education before November 30 of each year.

Merck Manual Awards. A copy of the *Merck Manual* is presented annually to past presidents of the Student Government Association and the Duke Chapter of the Student American Medical Association to recognize their contribution to the life of medical students at Duke University School of Medicine.

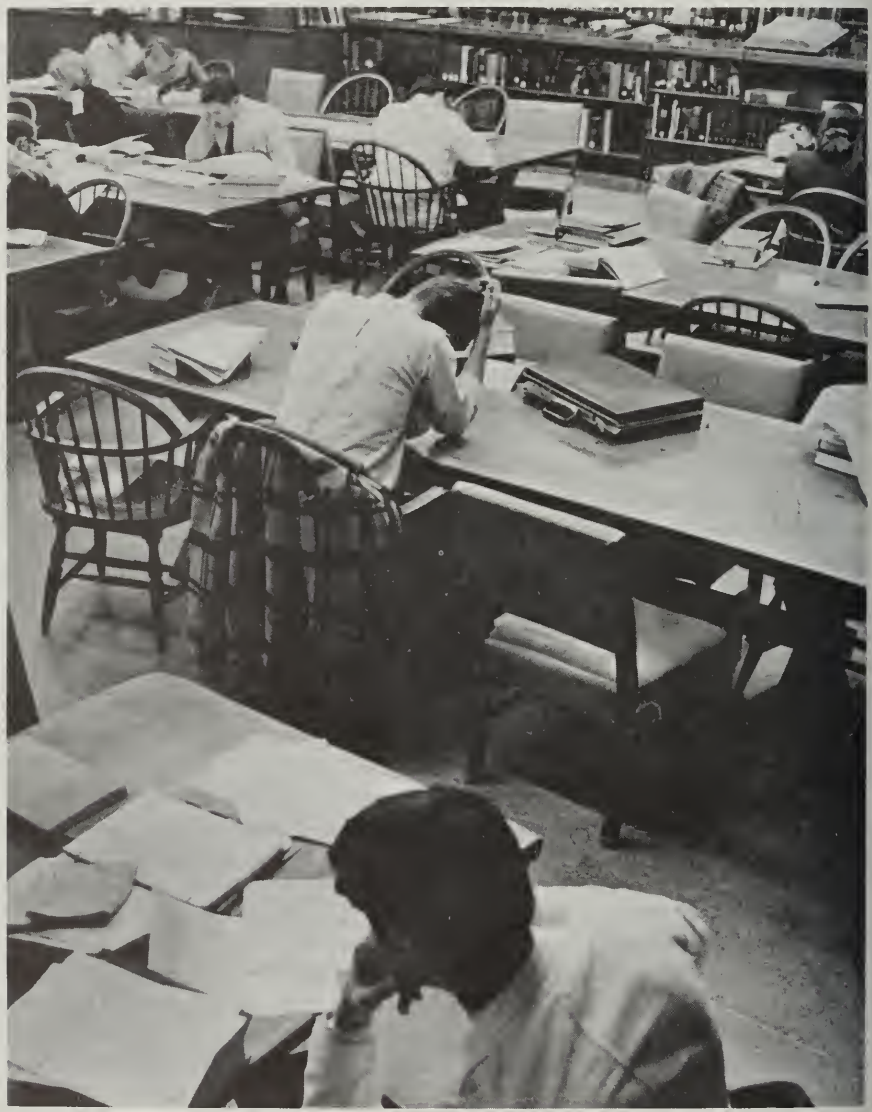
Roche Award. A gold engraved wrist watch and certificate is presented annually to the graduating senior who has achieved the highest academic performance throughout four years of medical school at Duke University School of Medicine.

Roche Medical Book Program. Each member of the senior class is sent a certificate that permits him to receive a medical textbook of his selection.

Duke University School of Medicine Awards. The past presidents of the Student Government Association and the Duke Chapter of the Student American Medical Association receive a book award in recognition of their contributions to student life.

The "Thomas Jefferson" Award. This award is made periodically to recognize outstanding achievement in fields outside those of medicine and science. The purpose is to identify individuals who have a broad range of talents and who have contributed materially to the life of the University as a whole.

The Upjohn Award in Community Medicine. This is an award of $200.00 given to a Duke student for the best essay discussing some aspect of the social, cultural, economic, and other parameters of health. The paper should incorporate personal experiences. There is no limitation on length. Applicants should submit their papers by November 30 of each year to Dr. William DeMaria or Dr. E. Croft Long.



Admission

Intelligence, character, and integrity are the essential qualifications for admission.

A premedical student should be aware of the importance of a well-rounded general education as a preparation for the study of medicine and not limit himself to scientific courses. The Admissions Committee believes that the manner in which the college years are utilized is of greater importance than the specific subjects taken. The premedical student would be better advised to secure a knowledge of the principles and a thorough appreciation of the interrelations of the basic sciences than to accumulate credits in many courses. He should learn how to work independently, to observe critically, and to analyze rather than merely to store the information presented. Good study habits and use of time are perhaps the most important tools a student can bring to the study of medicine. His choice of studies beyond those required for admission should be governed by his own chief interests and by the intellectual stimulus to be derived from the work.

Application for Admission

Application forms may be obtained by writing to the Committee on Admissions, Box 3710, Duke Hospital, Durham, N. C., 27706. Please do not send a request before August 1. Formal applications will be accepted by the Committee on Admissions only between August 1 and December 1.

Requirements for Admission

A minimum of ninety semester hours of approved college credit is necessary for admission to the School of Medicine. These must include:

One year of college English which must consist primarily of expository English composition.
One year of inorganic chemistry.
One year of organic chemistry.
One year of physics.
One year of biology and/or zoology.
One year of calculus.

All science requirements must be completed not more than seven years prior to entrance.

Medical College Admission Test is required of all applicants. It is administered by the Psychological Corporation, 304 E. 45th St., New York, New York. This test is given at many of the colleges throughout the country in May and October of each year. Arrangements for taking this test should be made by the student through his premedical advisor. It is recommended that applicants perform this test in May of the year they plan to fill out applications.

Selection

Selection is made between September 15 and March 15 for the student entering the following September. The data on each candidate are carefully screened by the Committee on Admissions. A personal interview will be arranged for those with satisfactory credentials. If the distance from Durham is permissible the interview is conducted here; otherwise candidates are referred to our Regional Representatives. Many factors are evaluated by the Committee in the selection process. Those students who show the most promise for exceptional performance in their future practice of medicine are admitted. The candidate is notified as soon as possible whether or not he has been accepted. If he has been accepted, it is necessary for him to send a deposit of $50 by the succeeding March 1 in order to insure enrollment. This deposit is applied toward tuition and is refundable upon withdrawal prior to March 1. Inasmuch as admission must be offered a considerable period in advance of matriculation, the admission must be provisional upon the successful completion of the remaining college work.

Applications for Transfer

Applicants who have completed two years in most of the American and Canadian schools will be considered for transfer only as space permits. Such transfer students would be required to complete the second and fourth year of our curriculum. For transfer, successful completion of Part I of the National Board Examination is required as evidence of satisfactory accomplishment in the subjects taught in the first two years of most North American schools.

A limited number of transfer students from foreign medical schools may be admitted each year. Such students should have completed their preclinical training and will be required to take Part I of the National Board Examination. If space permits, these students will be admitted to our sophomore clinical rotation and be required to complete the junior and senior years, composed of electives in the clinical and preclinical areas. By attending two summer sessions a transfer student from a foreign medical school can earn his M.D. degree from Duke University approximately two and one half years after matriculation.

Requests for transfer application materials must be made by January 15 of the year of anticipated transfer. The deadline for the receipt of completed applications is March 15 of the same year. Competitive applicants will be sponsored for Part I of the National Board Examinations to be given in June of that year as part of the evaluation procedure. Upon receipt of the results of this examination, personal interviews will be arranged for those with satisfactory credentials.

Transfers into the freshman or senior year are not permitted.

Advanced Placement for Entering Freshman

Advanced placement will be offered on an optional basis to qualified students for the following first semester courses: anatomy, biochemistry, and physiology. Those students who wish to be considered for advanced placement must take examinations in these subjects for which they want consideration. These examinations will be scheduled during the first week of medical school. Students who are granted and accept advanced placement for a given course will not have to take that first semester course. However, they will be responsible to the departmental chairman and will have to work out mutually agreeable substitute activities.

Students who have successfully completed the Ph.D. in the biomedical or preclinical sciences may apply for a three-year program leading to the M.D. degree, consisting of the freshman "core" year followed by the sophomore clinical rotation and senior clinical electives.

Summary for Applicants

Years of College work required	Three
Nonrefundable application fee	10.00
Deposit required on or before March 1, 1970, from accepted applicant	50.00
Medical College Admission Test required	Yes
Size of 1969-70 first year class	86
File application for admission between	August 1, 1969 December 1, 1969
Notification of action on application between	October 1, 1968 March 15, 1970
Date entering class starts school	September 1, 1970

Regional Representatives of the Committee on Admissions

Alabama: *Birmingham*, Ben V. Branscomb
Alaska: *Anchorage*, Milo H. Fritz
Arizona: *Phoenix*, Stanley Karansky
Arkansas: *Little Rock*, Rosalind Smith Abernathy
California: *Berkeley*, H. I. Harvey; *Davis*, Robert S. Stempfel, Jr.; *Los Angeles*, Joseph A. Conroy, Douglas F. Smiley; *Menlo Park*, Gustave Freeman; *Palo Alto*, Leon Cohen, James B. Golden; *Pasadena*, Robert H. Pudenz; *San Francisco*, John E. Cann, R. Gray Patton; *San Mateo*, Lester H. Margolis; *West Covina*, Jeremiah W. Kerner; *West Los Angeles*, James L. Scott
Canada: *Montreal*, J. E. Gibbons; *Toronto*, John B. Armstrong
Colorado: *Colorado Springs*, Donald D. Borders; *Denver*, F. Vernon Altvater, Howard T. Horsley, Jr., John Ray Pryor, Fred W. Schoonmaker
Connecticut: *Hartford*, William H. Glass; *New Haven*, Clarence D. Davis, Saul A. Frankel, Joseph Mignone, Ned M. Shutkin, *Old Saybrook*, John R. Egan
District of Columbia: Louis Spekter
Florida: *Gainesville*, Lamar Roberts, Joseph W. Shands, Jr.; *Jacksonville*, David W. Brooks, Jr.; *Lakeland*, Charles Larsen, Jr., John Verner, Jr.; *Miami*, James J. Hutson, David H. Reynolds; *South Miami*, Stanley J. Cannon; *St. Petersburg*, David S. Hubbell; *Tampa*, Richard G. Connar
Georgia: *Atlanta*, James C. Crutcher, E. B. Dunlap
Germany: *Berlin*, Otto H. Gauer
Hawaii: *Honolulu*, Richard K. Blaisdell, James G. Harrison, Jr.

Idaho: *Boise*, William L. Venning; *Idaho Falls*, Reid H. Anderson
Illinois: *Chicago*, Ruth K. Freinkel, George H. Gardner, Daniel J. Pachman, Theodore B. Schwartz; *Evanston*, Donald R. Mundie, Milton Weinberg, Jr.; *Monmouth*, Kenneth E. Ambrose
Indiana: *Indianapolis*, Norman H. Bell, John D. Graham, Joseph C. Ross
Iowa: *Davenport*, Alexander W. Boone; *Des Moines*, Charles W. Latchem; *Sioux City*, Havner H. Parish, Jr.
Kansas: *Kansas City*, Wilkes O. Hiatt, Jr., Ralph H. Major; *Salina*, Roy B. Coffey; *Wichita*, Thomas Jager
Kentucky: *Lexington*, Kearns R. Thompson; *Louisville*, Billy Franklin Andrews, Georga Uhde
Louisiana: *New Orleans*, Richard H. Corales, Jr., Norbert Enzer, Harold M. Horack, Richard M. Paddison, Philip H. Jones
Maine: *Portland*, E. Charles Kunkle
Maryland: *Baltimore*, John T. King, C. Edward Leach; *Towson*, William C. Battle
Massachusetts: *Boston*, Raymond D. Adams, James H. Currens, Ellison C. Pierce, Jr., James L. Tullis, R. Lewis Wright, David Michael Young, James H. Austin, Dorothy A. Elias; *Springfield*, George A. Sotirion
Michigan: *Ann Arbor*, George E. Bacon, Lamar J. Hankamp, Muriel Meyers, Donald L. Rucknagel; *Detroit*, Robert F. Kandel; *Port Huron*, William T. Davison
Minnesota: *Minneapolis*, Lewis W. Wannamaker; *Rochester*, Richard E. Symmonds
Missouri: *Columbia*, John T. Logue; *St. Louis*, Thomas B. Ferguson
Nebraska: *Beatrice*, R. Brown
New Hampshire: *Hanover*, George Margolis, R. J. Vanderlinde
New Jersey: *Montclair*, Benjamin B. Burrill; *New Brunswick*, Gordon Benson, William E. McGough
New Mexico: *Albuquerque*, Robert Proper; *Artesia*, C. Pardue Bunch
New York: *Albany*, Stuart Bondurant, Frank M. Woolsey, Jr., *Buffalo*, Oliver J. Bateman; *Endicott*, James K. Tompkins; *Hornell*, Gordon Stenhouse; *Ithaca*, John G. Maines; *Lockport*, Frank H. Crosby; *New York*, Elaine Eyster, Jules Hirsch, Eugene L. Horger, Julia M. Jones, Michael J. Lepore, J. William Littler, Richard A. Ruskin, Leonard H. Schuyler, Robert A. Shimm; *Pittsford*, Rufus S. Bynum; *Rochester*, William L. Sutton; *Syracuse*, Alfred S. Berne, Herbert Lourie, James E. Sheehy
Ohio: *Cincinnati*, Murray B. Sheldon, Jr.; *Cleveland Heights*, Robert B. Kubek; *Columbus*, Robert J. Atwell, Charles A. Doan, Lucy R. Freedy, George W. Paulson, James V. Warren; *Dayton*, Stuart R. Ducker; *Elyria*, William L. Hassler; *Toledo*, William A. Phillips
Oklahoma: *Tulsa*, Gerald E. Cronk
Oregon: *Portland*, Richard R. Carter, Joseph F. Paquet
Pennsylvania: *Bethlehem*, Ralph K. Shields, James G. Whildin; *Bryn*

Mawr, John V. Blady; *Doylestown*, Zachary A. Simpson, *Harrisburg*, Earl S. Moyer, Alfred J. Sherman; *Johnstown*, W. Frederick Mayer; *Philadelphia*, Max W. Fischbach, Doris A. Howell, Alfred M. Sellers; *Pittsburgh*, H. V. Murdaugh, Jr., Jack D. Myers; *Scranton*, Louis C. Waller; *Williamsport*, William R. Brink

Puerto Rico: *Santurce*, Kenneth B. Brown, Rafael Hernandes-Saldana

Rhode Island: *Providence*, Richard P. Sexton

South Carolina: *Charleston*, Edward F. Parker, J. I. Waring; *Columbia*, Ben N. Miller, James M. Timmons; *Greenville*, Raymond C. Ramage

Tennessee: *Chattanooga*, Richard Van Fletcher; *Memphis*, William L. Byrne, Jack Greenfield, Ralphael E. Semmes; *Nashville*, Walter G. Gobbel, Jr., Alexander C. McLeod, Greer Ricketson; *Sewanee*, Henry T. Kirby-Smith

Texas: *Austin*, Francis A. Morris, Jr.; *Dallas*, Reuben H. Adams, W. Crockett Chears, Jr., A. James Gill; *Fort Worth*, Henry L. Burks; *Galveston*, R. H. Rigdon; *Houston*, Elizabeth Balas Powell, H. Grant Taylor; *Midland*, Dorothy B. Wyvell; *San Antonio*, Robert H. Barnes, Royall M. Calder; *Temple*, E. Clinton Texter, Jr.

Utah: *Salt Lake City*, Andrew Deiss

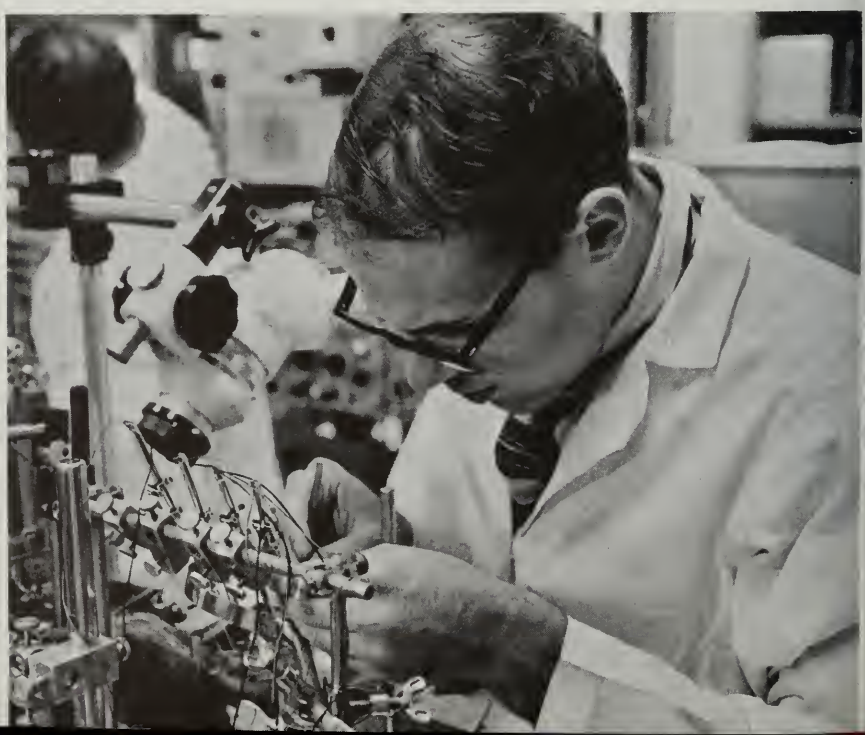
Vermont: *Burlington*, Edward S. Horton

Virginia: *Charlottesville*, Henry B. Mulholland; *Waynesboro*, Thomas L. Gorsuch

Washington: *Seattle*, A. Lawrence Banks, William A. MacColl, Lois Hale Watts

West Virginia: *Charleston*, Harold H. Kuhn

Wisconsin: *La Crosse*, C. Norman Shealy; *Milwaukee*, Ramon L. Lange, Jack L. Teasley



Courses of Instruction

Note: An asterisk placed before the course number (*ANA-206B) indicates that the course follows the timetable of the Graduate School.

Anatomy

Professor J. D. Robertson, *Chairman*; Professors J. Buettner-Janusch, J. Everett, J. Markee, M. Moses, T. Peele; Associate Professors R. Becker, W. Cuyler, K. Duke; Assistant Professors C. Christian, W. Longley, M. Mahaley, J. H. Prost; Associates F. Bassett, S. Counce-Nicklas; Visiting Lecturer, C. Doggenweiler

Required Course

The core course of instruction in Human Anatomy (ANA-200) will constitute about 253 hours during the first 18 weeks of the first year.

Elective Courses

*ANA-206(B). *Anatomy of Back and Extremities.* Weight: 3. Term 3: Jan.-March. *Markee and Bassett*

*ANA-208(B). *Anatomy of the Trunk.* Weight: 2. Term 3: Jan.-March. *Markee and Duke*

*ANA-216(B). *Anatomy of the Head.* Weight: 2. Term 4: April-May. *Markee and Everett*

*ANA-220(B). *Dissection of Restricted Regions.* Weight: 3. Term 4: April-May. *Markee and Duke*

ANA-230(B). *Advanced Neuroanatomy of Motor Mechanisms.* Weight: 2. Term 4: April-May. *Peele*

*ANA-231(B). *Physical Anthropology.* Weight: 1½ per 9 weeks. Terms 1 and 2: Sept.-Jan. *Buettner-Janusch*

*ANA-232(B). *Human Genetics.* Weight: 1½ per 9 weeks. Terms 3 and 4: Jan.-May. *Buettner-Janusch*

*ANA-236(B). *Advanced Neuroanatomy of Sensory Mechanisms.* Weight: 2. Term 3: Jan.-March. *Peele*

ANA-237(B). *Neuroendocrinology.* Weight: ½ per 9 weeks. Terms 3 and 4: Jan.-May. *Everett*

ANA-238(B). *Evolutionary Biology and Medical Science.* Weight: 3. Term 4: April-May. *Buettner-Janusch and Prost*

*ANA-244(B). *Topics in Cell Structure and Function.* Terms 3 and 4: Jan.-May. *Moses and Nicklas*

ANA-256(B). *Surgical Neuroanatomy.* Weight: 1. Terms 2 or 4: Nov.-Jan., April-May. *Mahaley*

*ANA-340(B). *Tutorial in Advanced Anatomy.* Weight: 1½ per 9 weeks, 3 per 18 weeks. Terms 3 and 4: Jan.-May. *Robertson, Becker, Buettner-Janusch, Duke, Everett, Franzini-Armstrong, Longley, Moses, and Peele*

*ANA-354(B). *Research Techniques in Anatomy.* Weight: 8. Term: Summer. *Becker, Buettner-Janusch, Counce, Duke, Everett, Moses, Peele, and Robertson*

*ANA-382(B). *Topics in Developmental Biology.* Weight: 1 per 9 weeks. Terms 3 and 4: Jan.-March, Jan.-May. *Counce*

Behavioral Sciences Study Program

The Behavioral Sciences Study Program (BSP-201B) is designed to enable a student to obtain an understanding of the basic processes underlying human behavior. This will involve a year long intensive experience designed to familiarize the medical student with significant issues in the behavioral sciences and the methodology used to investigate such issues. An extensive period of study with one of the faculty will be an important component.

The Behavioral Sciences Study Program will also enable the student to obtain an understanding of the characteristics of group and community activity. To enable the student electing a behavioral sciences program to have an intensive and meaningful experience, he will be asked to focus on one of two major subdivisions. One such subdivision will be concentrated on processes which take place primarily within the individual organism. The faculty of this subgroup is oriented toward biological and

experimental psychology including central nervous system effects on behavior, ANS response to stress and behavioral correlates, and learning and conditioning as well as perception and ethnology.

For those students wishing to focus their interests on interpersonal or group behavior, a second subdivision will include studies of personality and motivation, family structure, small group behavior, and community and social organization, including population and demographic studies. Students' activities will be in three major areas: one, a weekly seminar with a limited number of faculty; second, an individual tutorial, each student to work with a faculty person in laboratory or library investigation; and three, up to two graduate or medical school courses may be undertaken as determined by the student and his preceptor. Weight: 9 per 9 weeks. Terms 1, 2, 3, and 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Eisdorfer, Feather, and Back*

Biochemistry

Professor P. Handler, *Chairman*; Professors M. Bernheim, S. Gross, W. Guild, R. Hill, H. Kamin, K. McCarty, C. Tanford, S. Wakil; Associate Professors I. Fridovich, J. Harris, J. Kanfer, B. Kaufman, N. Kirshner, W. Lynn; Assistant Professors R. Greene, D. Hall, P. Harriman, J. Joshi, K. V. Rajagopalan, H. Sage, L. Siegel, R. Wheat; Associates R. Habig, Y. Nozaki, P. Holloway

Technical Associate L. Daniels; *Fellows* L. Arqueros, I. Björk, D. Calbreath, F. Castellino, M. Coughlan, R. Ferris, W. Fish, C. Holloway, V. Joshi, A. Kirshner, K. Mann, P. Mattock, H. Schulz, B. Sedgwick, D. Straub, J. Sullivan, A. Swindell, I. Trayer, O. Viveros, G. Weeks, K. Wong

Required Course

The required course in Biochemistry (BCH-200) for first year students is given over a period of eighteen weeks in the first term. The required course in Genetics (BCH-204) for first year students is given over a period of eleven weeks in the second term.

Elective Courses

*BCH-203(B). *Chemistry of Natural Products.* Weight: 2 per 18 weeks. Terms 1 and 2: Sept.-Jan. *Kaufman and Kanfer*

*BCH-250(B). *Biochemistry of Development.* Weight: 1 per 18 weeks. Terms 3 and 4: Jan.-May. *McCarty and J. Harris*

*BCH-303(B). *Macromolecules.* Weight: 4 per 18 weeks. Terms 1 and 2: Sept.-Jan. *Tanford and Hill*

*BCH-308(B). *Metabolism.* Weight: 5 per 18 weeks. Terms 3 and 4 Jan.-May. *Kamin and Staff*

BCH-312(B). *Clinical Chemistry Laboratory.* Weight: 1 per 9 weeks Terms 1, 2, 3, and 4: Sept.-Nov., Nov.-Jan., Jan.-March, April-May *Habig*

*BCH-315(B). *Molecular Genetics.* Weight: 3 per 18 weeks. Terms 1 and 2: Sept.-Jan. *Guild and Staff*

*BCH-347(B). *Special Topics.* Weight: 1 per 18 weeks. Terms 1 and 2 Sept.-Jan. *Staff*

*BCH-348(B). *Special Topics.* Weight: 1 per 18 weeks. Terms 3 and 4: Jan.-May. *Staff*

*BCH-351(B). *Genetics Seminar.* Weight: 1 per 18 weeks. Terms 1 and 2: Sept.-Jan. *Gross and Staff*

*BCH-352(B). *Genetics Seminar.* Weight: 1 per 18 weeks. Terms 3 and 4: Jan.-May. *Gross and Staff*

*BCH-354(B). *Biochemistry of Disease.* Weight: 2 per 18 weeks. Terms 3 and 4: Jan.-May. *Handler and Staff*

BCH-355(B). *Research in Genetics.* Weight: 1-8 per 9 weeks. Terms 1 and 2: Sept.-Jan.

BCH-356(B). *Research in Genetics.* Weight: 1-8 per 9 weeks. Terms 3 and 4: Jan.-May, or June-Aug., summer term.

BCH-357(B). *Research in Biochemistry.* Weight: 1-8 per 9 weeks. Terms 1 and 2: Sept.-Jan.

BCH-358(B). *Research in Biochemistry.* Weight: 1-8 per 9 weeks. Terms 3 and 4 *or* June-Aug., summer term.

Cardiovascular-Respiratory Sciences Study Program

The Cardiovascular-Respiratory Sciences Program (CVS-201B) is designed to offer third-year students integrated instruction for one academic year in the basic sciences which relate to the cardiovascular and respiratory systems. The program is interdepartmental in nature and will constitute a full credit load for those students who participate. It is comprised of three parts that run concurrently.

1. *Individual Tutorial.* The student will identify with a senior member of the medical school faculty who is participating in the program. The major part of the educational program for the student will be in the form of individual tutorials with this member of the staff. This tutorial may be full-time independent research or an intensive study experience for the student. The student and his tutor will develop a plan and will review it with the directors of the program.

2. *Group Seminar.* A seminar series will be developed, the purpose of which is to read and discuss selected papers and discuss problems of

instrumentation and topics which are considered complementary to the required lecture course. Students will be active participants in the seminar, and through this mechanism it is hoped to integrate knowledge of cellular physiology into an understanding of organ system function and control. Other seminars may be taken in addition to this.

3. *Lecture Course.* The course in cardiovascular and respiratory physiology and pharmacology offered by the Department of Physiology is required. This course will present selected topics in cardiovascular and respiratory physiology and pharmacology, including electrophysiology, mechanics, structure, developmental physiology, metabolism, energetics, peripheral circulation, diffusion, gas transport, mechanics of respiration, and respiratory responses in hypobaria and hyperbaria. This course will meet twice a week for one hour each session. Other courses may also be taken. The student will be encouraged to complement his tutorial by taking at least one additional third-year course, if it is considered appropriate by the tutor and the program director.

The above plan provides a structured and recommended curriculum design. Within this framework multiple pathways are available because of the concentration of effort in the tutorial experience. Tutorials can be arranged within any of the basic science departments or with individuals in clinical departments whose orientation and research are consistent with the goals of the program. Once a tutor is identified, added flexibility is gained by having the option to elect courses in addition to the required course in physiology and pharmacology or to elect seminars in addition to the group seminar. Weight: 9 per 9 weeks. Terms 1, 2, 3, and 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Johnson, Wallace, Renkin, Salzano, Sommer, Lieberman, Bressler, Starmer, Jobsis, Greenfield, Graham, Ebert, Boineau, and Holloway*

Clinical Cancer Training Program

Professor W. Shingleton, *Chairman*; Associate Professors J. Laszlo, G. Wilbanks, J. Cavanaugh, S. Porter, S. Heyden, Johnson

The Clinical Cancer Training Program, supported by a grant-in-aid from the USPHS, is designed to improve clinical cancer training for the medical student and for the postdoctoral trainee.

The basic course, Survey of Cancer, Basic and Clinical (CTP-209C), is an interdepartmental survey of basic and clinical cancer. It is offered as an elective to senior medical students and for postdoctoral fellows in the Training Program. Weight: 8. Terms 1 or 3: Sept.-Nov., Jan.-March.

Additional time is spent in those areas in the Medical Center primarily involved with cancer diagnosis and treatment, such as surgical pathology, radiotherapy, medical and pediatric hematology, and inpatient and

outpatient tumor services of the Departments of Surgery and Obstetri and Gynecology. The student or trainee may choose one or several these areas in which to work, and individual programs can be develope for each participant according to his specific interests.

The Training Program is supplemented by a tumor registry whe accurate follow-up records are available to staff and students. The da collected include results of treatment of large numbers of patients expressed in percentages of those (1) free of recurrence, (2) apparent cured, (3) having a recurrence, or (4) dead of recurrence at varyir times after onset of the disease and the institution of therapy.

The faculty for the Training Program consists of selected members the Medical School faculty who possess an interest in clinical canc teaching and who are designated for this type of teaching by their d partment heads.

Community Health Sciences

Professor E. Estes, Jr., *Chairman*; Professors J. Arena, W. DeMaria, I Long, D. Smith (Emeritus), M. Musser, M. Woodbury. Associate Profe sors M. Bryson, S. Heyden, E. Persons, L. Pondy, Assistant Professors I Hammond, J. Hayes, J. McFarland, M. Mauney, W. O'Fallon, R. Por wood, F. Starmer, H. Thompson, Associates F. Dalton, R. Howard, C Knight, H. Kotin, D. Lewis, D. Nauman, J. Nowlin, R. Thompson, T Thorpe, Research Associate F. Dorsey, Instructor H. Register, Visitin Scholar L. Goldwater.

Required Course

The required course in Community Health Sciences (CHS-200) will b given during the second year.

Elective Courses

CHS-208(B). *Medical Uses of Computers.* Weight: 2. Terms 2 or 4 Nov.-Jan., April-May. *Thompson*

CHS-215(B). *Biostatistics in the Medical Sciences.* Weight: 2. Ter 3 or summer: June-Aug., Jan.-March. *O'Fallon*

CHS-203(C). *International Health Organizations.* Weight: 1. Term 4 March-May. *Long and visiting lecturers*

CHS-205(C). *International Medicine.* Weight: 1. Term 4: March May. *Long and visiting lecturers*

CHS-207(C). *Research in International Health.* Weight: 2. Ever term. *Long and Staff of U.N.C. School of Public Health*

CHS-210(C). *Student Community Health Program.* Weight: 9. Term

June-Aug., summer term. *Long and DeMaria; Faculty of Department of Community Health Sciences, Duke; School of Public Health, U.N.C.; Department of Preventive Medicine, University of San Carlos, Guatemala; Dr. Edwin Wallace, Director, Gray Memorial Hospital, Nicaragua*

CHS-217X(C). *Community Health in Georgia.* Weight: 9. Term: June-Aug., summer term. *Dr. Heyden and Dr. Hames (general practitioner, director of the Evans County Study)*

CHS-219(C). *Tutorial in Clinical Epidemiology.* Weight: 2. Terms 3 or 4: Jan.-March, March-May. *Heyden*

PSC-305(B). *Social and Cultural Aspects of Illness.* Weight: 3. Term 4: March-May. *Maddox, Palmore, and Jackson*

Endocrinology

Associate Professor H. Lebovitz, *Director*; Associate Professor H. McPherson, *Director, Endocrine Clinic*; Professor R. Bressler; Associate Professor D. Christian; Assistant Professors R. E. Fellows, R. Gibbs, and R. Turkington; Associates J. Feldman, S. Fortney, and T. Huff
Fellows K. Shultz, F. Neelon, B. Goldstein, J. Howard, J. Males, G. Cunningham, and H. Delcher

The Division of Endocrinology was organized by Dr. E. C. Hamblen in 1936 as a division of the Department of Obstetrics and Gynecology. In 1955 it was reorganized as an integrated service with a staff drawn from several clinical and preclinical departments. Its objective is to give comprehensive training in basic and clinical endocrinology and metabolism, particularly at the postgraduate level.

END-203(C). *Research Topics in Endocrinology and Metabolism.* Weight: 8. Every term. *Lebovitz, Bressler, Gibbs, Turkington, and Staff*

END-207(C). *Metabolic Response to Disease.* Weight: 1. Term 4: March-May. *Lebovitz, Bressler, McPherson, Gibbs, Turkington, and Staff*

Endocrinology Study Program

The Endocrinology Study Program (EDR-201B) is an interdepartmental program offering an opportunity for intensive study in endocrinology, neuroendocrinology, reproduction, and endocrine metabolism in Year 3. The program emphasizes guided independent study and the development of a tutorial relationship with a member of the Program faculty. Weight: 9 per 9 weeks. Terms 1, 2, 3, and 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Fellows, and Staff*

Medicine

Professors J. B. Wyngaarden, *Chairman*, M. D. Bogdonoff, R. Bressle
J. L. Callaway, E. H. Estes, J. P. Hendrix, A. Heyman, W. Kempne
G. P. Kerby, W. S. Lynn, H. D. McIntosh, E. E. Menefee, M. J. Musse
W. M. Nicholson, E. S. Orgain, E. L. Persons, J. M. Ruffin, R. W. Runc
les, S. M. Sessoms, H. O. Sieker, E. A. Stead, M. P. Tyor; Professo
Emeritus O. Hansen-Pruss, D. T. Smith; Associate Professors T. I
Andreoli, S. H. Appel, C. E. Buckley, T. R. Cate, J. R. Clapp, W. I
Floyd, J. C. Greenfield, J. N. Kanfer, K. H. Kilburn, M. Kinsbourne, J.
Kylstra, J. Laszlo, H. E. Lebovitz, H. T. McPherson, J. J. Morris, S. Oste
hout, T. Peele, E. Peschel, J. B. Pfeiffer, J. Ramirez-R., R. R. Robinso
W. F. Rosse, H. A. Saltzman, H. K. Thompson, A. G. Wallace, R. I
Whalen; Assistant Professors C. M. Armstrong, J. P. Boineau, I.
Brody, R. Fellows, C. J. Gerber, R. H. Gibbs, R. J. Gorten, J. C. Gu
nells, W. N. Kelley, Y. Kong, N. M. Kredich, W. B. Kremer, M. I
McLeod, H. Nagaya, R. H. Peter, R. M. Portwood, H. R. Silberman,
M. Schanberg, C. F. Starmer, J. P. Tindall, R. Turkington, J. J. West, I
L. Young; Associates V. S. Behar, C. Bennett, M. Dick, A. V. Escuet
J. M. Feldman, S. R. Fortney, R. S. Gilgor, J. Hijmans, T. A. Huff, L.
Lessin, R. I. Lopez, P. A. McKee, S. M. McMahon, D. S. Miller, B. (
Newborg, J. E. Roberts, J. Ruskin, J. E. Rygorsky, J. T. Tomasini, S. I
Quarfordt; Clinical Assistant Professors A. D. Cooper, W. C. Styro
Clinical Associates S. W. Barefoot, W. Batten, J. R. Bumgarner, G. W
Crane, C. L. Curry, W. Fitzgerald, P. Gebel, H. E. Grode, T. T. Jone
C. Johnson, G. E. Koury, T. D. Long, E. Lupton, J. A. Lusk, D. E. Mille
J. A. Moore, H. T. Perkins, J. G. Robbins, W. V. Singletary, A. D. Smit
D. Welton; Clinical Instructors J. D. Hamilton, J. A. Merchant
Instructors H. V. Austin, R. Bache, W. T. Bennett, T. A. Bensinger, G. I
Blumenschein, W. H. Carter, O. Cordon-C., G. R. Cunningham, C. I
Curry, H. K. Delcher, V. W. Dennis, J. E. Douglas, A. L. Ferguson, I
W. Festoff, J. T. Garbutt, R. L. Goldenberg, B. M. Goldstein, L. F. Gre
ory, G. M. Halprin, K. Hanson, W. F. Holland, W. J. Howard, A.
Huang, L. Johnson, R. J. Karpick, T. J. Kenney, W. J. Klein, S. E. Kohle
G. L. Logue, S. Lunzer, H. Maizel, J. L. Males, R. L. McGowan, W. I
Morris, K. Nakajima, F. Neelon, G. A. Nottebohm, W. H. Obenour, I
Orme, E. Overfield, L. Pearce, A. R. Price, B. Ramo, D. C. Rausch, L.
Roman-I., M. Rotman, K. Schultz, P. D. Springberg, M. Waggoner, (
Wagner, W. R. Warr, M. Waxman, R. Wilkins, M. J. Zitt, D. M. Treima
Chief Residents J. E. Rygorsky, J. U. Gutterman, S. G. Romeo, M. I
Rozear
Assistant Residents C. E. Bemis, A. E. Boyd, D. L. Brewer, W. S. Elia
J. F. Hallal, A. Walston, H. J. Zeft, D. G. Allen, T. D. Beardmore, W. I
Bell, L. J. Bynum, J. N. Davis, J. P. Gockerman, M. S. Horwich, G.
Hunn, H. B. Kelso, M. E. Kendall, A. B. Latty, W. F. Malzone, K. M

Iatchett, M. E. Matthews, B. D. McLees, R. F. Miller, H. B. Mundy, . S. Panush, A. H. Pribble, R. A. Rosati, C. J. Rubenstein, C. H. Srodes; *nterns* D. W. Allen, W. N. Brandt, E. W. Braun, A. S. Brenner, M. J. Brickman, R. L. Carolla, J. W. Cook, J. J. Gallagher, R. W. Gause, J. H. Iall, D. P. Henry, D. S. Hutchison, W. G. Elmore, L. A. Kerson, G. A. ehman, G. M. Levine, W. S. Logan, D. F. Mandetta, R. G. Matthews,). F. Mosher, T. E. Nash, D. F. Newton, W. P. Nixon, M. D. Parker, I. F. Pross, J. R. Rice, G. H. Stoltzner, W. P. Taylor

Required Course

The Department of Medicine traditionally has the responsibility of reparing the student for a lifetime of learning as he gives care to atients who ask him for help. The first step is to begin to think and ct like a doctor. A course in the first year—Introduction to Clinical Iedicine (MED-201)—prepares the student to take an active role in atient care. The student assigned to Medicine (MED-205) in the sec-nd year or electing Medicine in the fourth year acts in the role of a hysician.

Elective Courses

MED-207(C). *Advanced General Medicine.* Weight: 8. Every term. *Vyngaarden and Staff*

MED-209(C). *Allergy and Respiratory Diseases.* Weight: 8. Every erm. *Buckley, Cate, Kilburn, Kystra, McMahon, Menefee, Nagaya, ratt, Ramirez-R., Saltzman, and Sieker*

MED-211(C). *General and Behavioral Medicine.* Weight: 8. Every erm. *Bogdonoff*

MED-213(C). *Cardiovascular Diseases.* Weight: 8. Every term. *Mc-ntosh, Orgain, Floyd, Wallace, Morris, Peter, Estes, Whalen, and Staff*

MED-215(C). *Clinical Dermatology.* Weight: 1-8. Every term. *Calla-ay and Tindall*

MED-217(C). *Gastroenterology.* Weight: 8. Every term. *Tyor, lijmans, McLeod, Quarfordt, Ruffin, and Young*

MED-221(C). *Metabolism and Endocrinology.* Weight: 8. Every term. *ebovitz, McPherson, Nicholson, Bressler, Gibbs, and Turkington*

MED-227(C). *Rheumatic Diseases.* Weight: 8. Every term. *Kerby, ersons, Roberts, Wyngaarden, and Kelley*

MED-229(C). *Nephrology.* Weight: 8. Every term. *Robinson, An-reoli, Bennett, Clapp, Gunnells, and Peschel*

MED-231(C). *Clinical Hematology and Oncology.* Weight: 8. Every erm. *Rundles, Silberman, Laszlo, and Rosse*

MED-232(C). *Clinical Oncology.* Weight: 6. Every term. *Rundles, ilberman, Laszlo, and Rosse*

MED-234(C). *Metabolic-Genetic Disease Seminar.* Weight: 3. Term 3: Jan.-March. *Wyngaarden, Sidbury, Appel, Kelley, Kredich, Lessin and Staff*

MED-240(C). *Cardiovascular Research.* Weight: 4-8. Every term *McIntosh, Morris, Wallace, Greenfield, Bressler, Thompson, Kong, Peter Chen, and Ruskin*

MED-242(C). *Clinical Cardiology.* Weight: 8. Every term. *Orgain, Floyd, and Whalen*

MED-244(C). *Clinical Cardiology.* Weight: 8. Every term. *Ruskin, Zeft, Estes, and Greenfield*

MED-246(C). *Clinical Cardiovascular Physiology.* Weight: 8. Every term. *Morris, Kong, Peter, Behar, and Chen*

MED-248(C). *Behavioral Medicine Applied to Cardiovascular Disorders.* Weight: 8. Every term. *Bogdonoff*

MED-250(C). *Allergy and Clinical Immunology.* Weight: 8. Every term. *Buckley and Nagaya*

MED-252(C). *Physiological Aspects of Nephrology and Electrolyte Metabolism.* Weight: 1. Every term. *Robinson and Clapp*

MED-254(C). *Enterohepatic Circulation and Lipoprotein Metabolism* Weight: 2. Term 1: Sept.-Nov. *Tyor, Lack, Young, Quarfordt, McLeod and Hijmans*

MED-256(C). *Ambulatory Patient Care.* Weight: 1-8. Every term *Bogdonoff and Department of Medicine Staff*

SUR-223(C). *Medical and Surgical Renal Disease.* Weight: 8. Every term. *Glenn, Robinson, respective staffs*

PSC-331(C). *Dynamic Approach to Medical Problems Based on Psychoanalytic Theory.* Weight: 2-4. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May.

Medical Research Training Program

Professor W. R. Guild, *Director*; Associate Professor T. McManus; Assistant Professors W. Longley, W. Kredich, L. Siegel, K. V. Rajagopalan, H. K. Thompson, P. Harriman, D. Hall

The Medical Research Training Program (MRT-399B) is an elective available to qualified students in September of their third or fourth calendar year of medical school and to members of the resident staff and postdoctoral fellows with the M.D. degree. Weight: 9. Terms 1, 2, 3, 4, and summer: Sept.-June, June-Aug. research. *Guild, Director; staff*

Microbiology and Immunology

Professor W. K. Joklik, *Chairman*; Professors D. Amos, J. Beard, N.

Conant, E. Day, J. Larsh, H. Willett; Associate Professors R. Burns, S. Osterhout, R. Metzgar, R. Wheat, C. Zmijewski; Assistant Professors W. Boyle, H. Nielsen; Associate R. Buckley

Research Associates K. Anderson, M. Korczynski, E. Scheer, J. Skehel, R. Smith, I. Shif, H. Zweerink, C. Andrus, H. Bashir, H. Ohanian, L. Wilson

Research Assistant I. Cohen; *Technical Associate* H. Craig; Instructors A. Proctor, F. Ward; Fellow B. Hattler

Required Course

The required course in Microbiology (MIC 200) is given in the second term of the first year.

Elective Courses

*MIC-201(B). *Advanced Microbiology.* Weight: 1½ per 9 weeks. Terms 1 and 2: Sept.-Jan. *Wheat*

*MIC-225(B). *Yeasts, Fungi, and Actinomycetes.* Weight: 1½ per 9 weeks. Terms 1 and 2: Sept.-Jan. *Nielsen*

*MIC-231(B). *Fundamentals of Immunology.* Weight: 1½ per 9 weeks. Terms 1 and 2: Sept.-Jan. *Amos, Boyle, and Buckley*

*MIC-232(B). *Immunology of Cell Surfaces.* Weight: 1 per 9 weeks. Terms 3 and 4: Jan.-May. *Boyle*

MIC-233(B). *Immunological Studies of Human Tissue Antigens.* Weight: 3 per 9 weeks. Terms 1 and 2 or 3 and 4: Sept.-Jan., Jan.-May. *Metzgar*

*MIC-234(B). *The Immunobiology of Disease.* Weight: 1½ per 9 weeks. Terms 3 and 4: Jan.-May. *Buckley*

*MIC-271(B). *Cell Biology.* Weight: 1½ per 9 weeks. Terms 1 and 2: Sept.-Jan. *Joklik*

*MIC-310(B). *Microbial Physiology.* Weight: 1½ per 9 weeks. Terms 3 and 4: Jan.-May. *Burns*

*MIC-311(B). *Immunochemistry I. Antibodies.* Weight: 1 per 9 weeks. Terms 1 and 2: Sept.-Jan. *Day*

*MIC-312(B). *Immunochemistry II. Antigens.* Weight: 1 per 9 weeks. Terms 3 and 4: Jan.-May. *Day*

*MIC-313(B). *Immunohematology.* Weight: 1 per 9 weeks. Terms 1 and 2: Sept.-Jan. *Zmijewski*

*MIC-316(B). *Immunogenetics.* Weight: 1 per 9 weeks. Terms 1 and 2: Sept.-Jan. *Amos, Boyle, and Southworth*

*MIC-325(B). *Medical Mycology.* Weight: 4. Term: Month of July. *Conant and Nielsen*

MIC-334(B). *Immunochemistry of Cell Surface Components.* Weight: 7-8 per 9 weeks. Terms 1 and 2 or 3 and 4: Sept.-Jan., Jan.-May. *Wheat*

MIC-336(B). *Human Histocompatibility Testing Procedures.* Weight: 4. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, April-May. *Zmijewski*

MIC-338(B). *Microbial Biochemistry.* Weight: 5. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, April-May. *Burns*

MIC-339(B). *Diagnostic Microbiology and Infectious Diseases.* Weight: 8. Terms 1, 2, 3, 4: Sept.- Nov., Nov.-Jan., Jan.-March, April-May. *S. Osterhout*

MIC-399(B). *Special Readings in Microbiology and Immunology.* Weight: 1-3 per 9 weeks. Every term.

MIC-401(B). *Pathophysiology of Infectious Diseases.* Weight: 2. Term 4: March-June. *Katz, Buckley, Cate, Lang, and S. Osterhout*

MIC-403(B). *Investigative Problems in Disease Caused by Viruses and Mycoplasmas.* Weight: 8. Terms 1, 2, and 3: Sept.-Nov., Nov.-Jan., Jan.-March. *Cate, Katz, and Lang*

Neurologic Sciences Program

Neurology: Professors A. Heyman, T. Peele; Associate Professors S. Appel, J. Kanfer, M. Kinsbourne, J. Pfeiffer; Assistant Professors C. Armstrong, I. Brody, S. Schanberg, J. West; Associates A. Escueta, R. Lopez; Fellows B. Festoff, S. Lunzer, L. Pearce; Residents L. Burger, C. Gerber, M. Rozear, N. Weng; *Neuropathology:* Professor S. Vogel; Assistant Professor J. Parker, G. Klintworth; *Neuroradiology:* Associate Professors J. Goodrich, J. Goree; Assistant Professors R. Gorten, I. Johnsrude; Associate J. Jiminez; *Neurosurgery:* Professor G. Odom; Associate Professor B. Nashold; Assistant Professor S. Mahaley; *Pediatric Neurology:* Professor J. Sidbury; Associate Professors M. Kinsbourne, T. Peele; Associate A. Renuart; *Electroencephalography:* Professor W. Wilson, Associate Professor R. Green

The Neurologic Sciences Program was established in April, 1964, to integrate and enlarge the neurologic teaching and research facilities in the Medical Center. It is an interdisciplinary unit comprised of several preclinical and clinical departments whose interests are specifically related to the various neurologic sciences.

Elective Courses

NSP-202(C). *Introduction to Clinical Neurology.* Weight: 2. Every term. *Lopez and Neurology Staff*

NSP-204(C). *Correlative Neurosciences.* Weight: 4. Every term. *Brody and Neurology Staff*

NSP-206(C). *Clinical and Laboratory Clerkship in Neurology.* Weight: 8. Every Term. *Heyman and Neurology Staff*

NSP-208(C). *Course in Cognitive Neurology.* Weight: 8. Term: Sept.-Nov. *Kinsbourne*

NSP-212(C). *Neuromuscular Diseases.* Weight: 1. Term 1: Sept.-Nov. *Brody, Armstrong, and West*

NSP-214(B). *Research Preceptorship in Molecular Neurobiology.* Weight: 8. Every term. *Appel*

NSP-216(B). *Research Preceptorship in Neurochemistry.* Weight: 8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Kanfer*

NSP-218(B). *Research Preceptorship in Biochemistry of Muscle Proteins.* Weight: 8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *West*

NSP-220(B). *Neural Function and Behavior.* Weight: 4. Term 1: Sept.-Nov. *Kinsbourne*

Neuroscience Study Program

The Neurosciences Study Program (NSS-201B) is an interdepartmental interdisciplinary program designed to coordinate the study of Neurobiology in the third year curriculum. The program permits the student an opportunity for independent study and growth in Neurobiology under the guidance of several basic science faculty members engaged in research in the nervous system. The program will last for 36 weeks. Weight: 8-9. Terms 1, 2, 3, and 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Appel*

Obstetrics and Gynecology

Professor R. Parker, *Chairman*; B. Carter, Professor and Chairman Emeritus; Professors W. Cherny, W. Cuyler, C. Peete, W. Thomas; Associate Professors A. Christakos, C. Christian; Associate Clinical Professors E. Easley, R. Pearse; Assistant Professors N. Anderson, M. Crenshaw, D. Schomberg, G. Wilbanks; Assistant Clinical Professors T. Adkins, W. Graham, K. Podger; Associate C. Hammond; Clinical Associates T. Stokes, R. Williamson

Research Associates C. P. Jones, L. Kaufmann; *Instructors* J. Younger, R. Yowell; *Fellows* R. Bechtel, J. Danford, T. Wyatt; *Residents* J. Herring, E. Long, B. Baker, W. Goldston, D. Halbert, J. Huddleston, K. Johnson, D. Jones, C. Parker, J. Sherer, E. Sowell, L. Wasserman

Required Courses

The first year student receives instruction in the fundamentals of ob-

stetric and gynecologic history and pelvic examination during their course in Introduction to Clinical Medicine. The second year student spends seven weeks in General Obstetrics and Gynecology (OBG-202).

Elective Courses

OBG-205(C). *Gynecologic Cancer.* Weight: 2. Every term. *Parker*

OBG-207(C). *Pathology: Obstetric and Gynecologic.* Weight: 2. Terms 2, 4, or Summer Term: Nov.-Jan., March-May, June-Aug. *Wilbanks, Parker, and Gyn. Resident on Surgical Pathology*

OBG-211(C). *Preparation for Practice.* Weight: 8. Every term. *Parker and Staff*

OBG-213(C). *Research Training.* Weight: 6. Every term. *Parker and Staff*

OBG-215(C). *The Infertile Couple.* Weight: 1. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Peete and Christakos*

OBG-217(C). *Human Embryology.* Weight: 1. Terms 2 and 3: Nov.-March. *Cherny*

OBG-229(C). *Endocrinology Seminar.* Weight: 1. Every term. *Christian, McPherson, Lebovitz, and Staff*

OBG-231(C). *Clinical Reproductive Endocrinology.* Weight: 4. Every term. *Christian, Staff, and Fellows of Endocrine Division*

OBG-233(C). *Neuroendocrinology.* Weight: 8. Term 2 or Summer Term: Nov.-Jan., June-Aug. *Christian*

OBG-235(C). *Cytogenetics.* Weight: 3. Terms 2 or 3: Nov.-Jan., Jan.-March. *Christakos*

Ophthalmology

Professor J. Wadsworth, *Chairman*; Professor Emeritus B. Anderson, Sr.; Clinical Professor Emeritus F. Stocker; Associate Professor B. Anderson, Jr.; Assistant Professor A. Chandler; Clinical Associate S. McPherson, Jr. *Research Professor* M. Wolbarsht; *Research Associate* G. Klintworth; *Instructors* E. Reese, J. Seaber, J. Price; *Clinical Instructors* L. Turner, R. Dawson; *Clinical Assistant* T. Kerns; *Residents* J. Price, D. Driver, N. Young; *Assistant Residents* D. Dephouse, J. Herring, H. Lefler, D. Thier, J. Carruth, M. Singleton, C. Wisor

OPH-201(C). *Investigative Ophthalmology.* Weight: 8. Every term. *Anderson and Wolbarsht*

OPH-203(C). *General Ophthalmology.* Weight: 8. Every term. *Chandler*

OPH-205(C). *Medical Ophthalmology.* Weight: 1. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Chandler and Staff*

OPH-207(C). *Basic Ophthalmic Sciences.* Weight: 1. Terms 1, 2, 3,

or 4: Sept.-Nov., Nov-Jan., Jan.-March, March-May. *Wadsworth, Staff, outside contributors*

OPH-209(C). *Refraction.* Weight: 8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Chandler*

OPH-211(C). *Neuro-ophthalmology.* Weight: 1 or 2. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Anderson*

OPH-213(C). *Ophthalmic Pathology.* Weight: 1. Every term. *Wadsworth and Klintworth*

OPH-215(C). *Ocular Diseases in Children.* Weight: 1. Every term. *Chandler*

SUR-221(C). *Surgical Specialties and Ophthalmology.* Weight: 8. Every term. *Silver, Boyarsky, Chandler, Hudson, McCollum, Pickrell, and Wilkins*

Pathology

Professor T. Kinney, *Chairman*; Professors B. Fetter, D. Hackel, B. Trump, J. Vazquez, F. Vogel; Clinical Professor P. Kotin; Professor Emeritus W. Forbus; Associate Professors J. Elchlepp, G. Klintworth, A. Musser, P. Pratt, D. Rowlands, Jr., J. Sommer, B. Wittels; Assistant Professors R. Blaker, P. Burkholder, W. Bradford, A. Martin, Jr., W. Johnston, H. Sage, G. Spooner, M. Vazquez; Associates F. Ginn, F. Graybeal, R. Guerry, N. Ratliff, S. Sahaphong, A. Saladino

Instructor S. Brawley, III; Technical Associates C. Bishop, J. Pickett; Fellows A. Arstila, E. Bossen, D. Graham, J. Hagadorn, H. Jauregui, R. Mathews, J. Parker, J. Wilson; Assistant Residents L. Ayers, F. Bastian, R. Carnighan, J. Gaede, S. Gardanier, W. Gardner, E. Kamstock, H. Leonhardt, E. Palmer, J. Sheehan, M. Quinn, R. Zipf; Interns R. Buddington, J. Daly, D. Denman, F. Elsas, J. Hall, R. Howell, R. Seningen

Required Course

The required course in Pathology (PTH-200) is given during the second term of the first year.

Elective Courses

PTH-201(B). *The Pathologic Basis for Clinical Medicine.* Weight: 4. Term 1: Sept.-Nov. *Hackel and Staff*

PTH-203(B). *Ophthalmic Pathology.* Weight: 3. Term 1: Sept.-Nov. *Klintworth*

PTH-209(B). *Obstetrical and Gynecological Pathology.* Weight: 3. Term 4: April-May. *Johnston, Fetter, Amatulli, and Staff*

PTH-223(B). *Autopsy Pathology.* Weight: 8. Every term. *Rowlands and Staff*

PTH-225(B). *Cardiovascular Pathology.* Weight: 2. Term 1: Sept.-Nov. *Hackel and Estes*

PTH-237(B). *Surgical Pathology.* Weight: 4. Term 4: April-May. *Fetter*

PTH-340(B). *Pathology of the Lymphoid System.* Weight: 3. Term 2: Nov.-Jan. *Rowlands*

PTH-342(B). *Special Topics in Pathology.* Weight: 8 per 9 weeks. Every term. *Kinney and Staff*

PTH-344(B). *Experimental Neoplasia.* Weight: 3. Term 4: April-May. *Kotin and Staff*

*PTH-346(B). *Subcellular and Molecular Pathology.* Weight: 3 per 18 weeks. Terms 1 and 2: Sept.-Jan. *Trump and Sommer*

PTH-348(B). *Practical Surgical Pathology.* Weight: 8. Every term. *Fetter and others*

PTH-352(B). *Biochemical Pathology.* Weight: 2. Terms 2 or 3: Nov.-Jan., Jan.-March. *Wittels*

PTH-353(B). *Advanced Neuropathology.* Weight: 3. Term 1: Sept.-Nov. *Vogel and Klintworth*

*PTH-360(B). *Enzymatic and Determinative Histochemistry.* Weight: 1½ per 9 weeks. Terms 3 and 4: Jan.-May. *Trump and Sommer*

*PTH-362(B). *Pathology of the Kidney.* Weight: 2. Term 2: Nov.-Jan. *Burkholder*

PTH-364(B). *Orthopaedic Pathology.* Weight: 2. Term 4: April-May. *Sommer and Mathews*

PTH-366(B). *Pulmonary Pathology and Post-Mortem Pathophysiology.* Weight: 3. Term 1: Sept.-Nov. *Pratt*

PTH-368(B). *Neonatal and Pediatric Pathology.* Weight: 3. Term 4: April-May. *Bradford and Martha Vazquez*

PTH-370(B). *Use of a Central Clinical Laboratory in Laboratory Medicine.* Weight: 4. Term 2: Nov.-Jan. *Musser, Spooner, and Guerry*

PTH-372(B). *Introduction to Diseases Due to Environmental Agents.* Weight: 2. Terms 1 and 3: Sept.-Nov., Jan.-March. *Vazquez, Kilburn, Pratt, Cate, Kotin, Lee, and Dowell*

Pediatrics

Professor S. L. Katz, *Chairman*; Professors J. Arena, S. Dees, A. McBryde, J. Harris, J. Sidbury, Jr., M. Spach; Professor Emeritus W. Davison; Clinical Professor A. London; Associate Professors J. Boineau, W. DeMaria, M. Kinsbourne, D. J. Lang, F. S. Porter, A. Spock; Assistant Professors G. Brumley, Jr., R. Buckley, R. Canent, Jr., J. Fowler, H. Harris, H.

Lowenbach, G. Lyon, Jr., T. Peele, A. Renuart; Assistant Professor Emeritus L. Hohman; Clinical Assistant Professors S. Cornwall, J. King, W. London; Associates J. Jones, E. Long, S. Osterhout; Clinical Associates D. Shearin, G. Watson, B. Webb

Instructors C. Ayers, S. Blumenschein, M. Jarmakani, S. Zirkle; *Clinical Instructors* C. Bailey, J. Brewer, M. Claxton, F. Eastwood, W. Farley, A. Johnson, T. Jones, D. Lockhart, N. Moseley, C. Neal, III, A. Rice, B. Skinner, J. Whatley; *Fellows* A. W. Alexander, C. Ayers, D. Berry, S. Blumenschein, R. R. Burns, T. Graham, Jr., B. F. Hinton, M. Jarmakani, P. Jewett, B. Keenan, T. King, R. Krueger, P. R. Page, H. Risemberg, L. Risemberg, P. Wubbena, Jr., S. Zirkle; *Chief Resident* R. Ford; *Senior Residents* T. K. Carlton, Jr., B. M. Cruikshank, V. A. Perriello, Jr.; *Junior Assistant Residents* James R. Beshear, H. P. Boggess, V. B. Giordano, A. H. Lubin, R. K. Marshall, Jr.; *Interns* J. W. Clark, P. C. Clark, S. A. Feldman, D. C. Fischer, M. G. Frecking, M. W. Gallagher, J. Kattwinkel, P. C. Latkin, R. D. Mack, C. V. Peery, II, D. C. Pross, J. H. Sightler, J. N. Woody

Required Course

The basic course in Pediatrics (PED-200) consists of seven weeks during the second year, the time being equally divided between clinic and ward services.

Elective Courses

PED-201(C). *General Pediatrics.* Weight: 8. Every term. *Katz and Pediatric Staff*

PED-203(C). *Pediatric Neurology.* Weight: 8. Terms 2 and 4: Nov.-Jan., March-May. *Kinsbourne and Staff*

PED-204(C). *Convulsive Disorders, and Mental Retardation.* Weight: 8. Every term. *Renuart*

PED-209(C). *Pediatric Endocrinology.* Weight: 8. Every term. *Sidbury*

PED-215(C). *Metabolic Disorders in Children.* Weight: 8. Every term. *Sidbury*

PED-217(C). *Pediatric Hematology.* Weight: 8. Every term. *Porter*

PED-221(C). *Poison Control.* Weight: 2. Every term. *Arena and Osterhout*

PED-223(C). *Preceptorship in General Pediatrics.* Weight: 6. Terms 2 or 3. Nov.-Jan., Jan.-March. *McBryde and Staff*

PED-225(C). *Newborn and Premature Infants.* Weight: 8. Term 3 or Summer Term: Jan.-March. *McBryde and Brumley*

PED-227(C). *Behavioral Aspects of Pediatric Illness.* Weight: 3. Every term. *Jones, Enzer, Anderson, Keith, Stedman, and Leventhal*

PED-231(C). *Clinical Pediatric Cardiology.* Weight: 8. Every term. *Spach, Canent, and Boineau*

PED-233(C). *Allergy, Clinical Immunology, and Pulmonary Diseases.* Weight: 8. Every term. *Staff*

PED-235(C). *Pediatric Oncology.* Weight: 8. Every term. *Lyon*

PED-239(C). *Perinatal Physiology.* Weight: 8. Terms 1 or 4: Sept.-Nov., March-May. *Brumley and Crenshaw*

NSP-208(C). *Course in Cognitive Neurology.* Weight: 8. Term: Sept.-Nov. *Kinsbourne*

Physiology and Pharmacology

Professor D. C. Tosteson, *Chairman of Department*

Division of Basic Physiology and Pharmacology: Professor E. M. Renkin, *Head of Division; Laboratory of Cardiopulmonary Physiology:* Associate Professor J. V. Salzano, Chief of Laboratory; *Laboratory of Cellular Endocrinology:* Assistant Professor R. Fellows; *Laboratory of Cellular Physiology:* Associate Professor T. J. McManus; *Laboratory of Membrane Physiology:* Professor D. C. Tosteson, Chief of Laboratory, Assistant Professor P. K. Lauf, Associate C. Franzini Armstrong, Research Associate M. Tieffenberg, Research Associate J. Gutknecht, Research Associate G. Kirk; *Laboratory of Integrative Neurophysiology:* Associate Professor G. Somjen, Chief of Laboratory, Assistant Professor L. Mendell, Associate C. J. Gerber; *Laboratory of Molecular Physiology:* Professor J. J. Blum, Chief of Laboratory, Associate Professor G. Padilla, Research Associate V. Kahn; *Laboratory of Muscle Physiology:* Professor P. Horowicz, Chief of Laboratory, Research Associates R. Venosa, A. de Hemptinne, A. Ruarte, Assistant Professor C. Armstrong; *Laboratory of Cerebral Physiology:* Associate Professor F. Jöbsis, Chief of Laboratory, Research Associate S. Hersey; *Laboratory of Biochemical Pharmacology:* Professor F. Bernheim, Chief of Laboratory, Associate Professor A. Ottolenghi; *Laboratory of Cellular Neuropharmacology and Toxicology:* Associate Professor T. Narahashi, Research Associates T. Deguchi and M. Yamada; *Laboratory of Synaptic Pharmacology:* Assistant Professor S. Schanberg; *Laboratory of Circulatory Pharmacology:* Professor E. M. Renkin, Chief of Laboratory, Assistant Professor E. Mills, Research Associates M. Kampp, H. Viveros

Division of Engineering Physiology: Professor John W. Moore, *Head of Division, Laboratory of Cellular Neurophysiology:* Professor J. W. Moore, *Chief of Laboratory; Laboratory of Neural Networks:* Assistant Professor H. Wachetl; *Laboratory of Cardiac Pharmacology:* Associate Professor E. A. Johnson, Assistant Professor M. Lieberman; *Laboratory of Reproductive Physiology:* Assistant Professor N. Anderson

Division of Clinical Physiology: Assistant Professor T. Andreoli, *Head of Division and Chief of Laboratory of Renal Transport Processes*, Associate Professor M. Wolbarsht (Ophthalmology), Chief of Laboratory of Visual Physiology, Assistant Professors R. Gibbs (Medicine), *Membrane Physiology*, J. Greenfield (Medicine), *Circulatory Physiology*, J. Kylstra (Medicine), *Respiratory Physiology*, S. Boyarsky (Urologic Surgery), *Renal Physiology*, P. Ove (Medicine), D. Schomberg (Ob-Gyn.), *Reproductive Physiology*
Division of Clinical Pharmacology: Professor R. Bressler, *Head of Division, Laboratory of Cellular Pharmacology:* Associate Professor P. Hochstein, *Chief of Laboratory, Laboratory of Metabolic Pharmacology:* Professor R. Bressler, *Chief of Laboratory*, Assistant Professor Klaus Brendel, *Laboratory of Molecular Pharmacology:* Associate Professor L. Lack, *Chief of Laboratory*
Division of Marine Physiology and Pharmacology: Professor R. Brauer, *Head of Division*

Required Course

The required course in Physiology (PHS-200) consists of lectures, seminars, and laboratory exercises offered by all members of the physiology staff during the fall term of the first year. The core course in Pharmacology (PHS-202) consists of lectures, seminars, and laboratories offered by all members of the pharmacology staff during the second term of the first year.

Elective Courses

*PHS-217(B). *Tutorial Seminar in Physiology and Pharmacology.* Weight: 1 per 9 weeks. Terms 1, 2, 3, and 4: Sept.-Jan., Jan.-May.

*PHS-219(B). *Tutorial in Physiology and Pharmacology.* Weight: 2 per 9 weeks. Terms 1, 2, 3, and 4: Sept.-Jan., Jan-May.

*PHS-258(B). *Environmental and Underwater Physiology and Pharmacology.* Weight: 9 per 9 weeks. Summer term. *Brauer and Staff*

*PHS-372(B). *Research in Physiology and Pharmacology.* Weight: 2-8 per 9 weeks. Terms 1 and 2 or 3 and 4, summer term: Sept.-Jan., Jan.-May. *Fellows and Staff*

*PHS-385(B). *Analysis of Physiological Systems.* Weight: 1½ per 9 weeks. Terms 3 and 4: Jan.-May. *Moore and Staff*

*PHS-387(B). *Cardiovascular and Respiratory Physiology and Pharmacology I.* Weight: 1 per 9 weeks. Terms 1 and 2: Sept.-Jan. *Johnson and Staff*

*PHS-389(B). *Cardiovascular and Respiratory Physiology and Pharmacology II.* Weight: 1 per 9 weeks. Terms 3 and 4: Jan.-May. *Salzano and Staff*

*PHS-391(B). *Neurophysiology and Neuropharmacology I.* Weight: 1½ per 9 weeks. Terms 1 and 2: Sept.-Jan. *Narahashi and Staff*

*PHS-393(B). *Neurophysiology and Neuropharmacology II.* Weight: 1½ per 9 weeks. Terms 3 and 4: Jan.-May. *Somjen and Staff*

*PHS-397(B). *Cellular and Biochemical Pharmacology I.* Weight: 1 per 9 weeks. Terms 1 and 2: Sept.-Jan. *Ottolenghi and Staff*

*PHS-398(B). *Cellular and Biochemical Pharmacology II.* Weight: 1 per 9 weeks. Terms 3 and 4: Jan.-May. *Ottolenghi and Staff*

*PHS-401(B). *Metabolic and Developmental Physiology and Pharmacology.* Weight: 4. Terms 1 and 2: Sept.-Jan. *Blum and Staff*

*PHS-403(B). *Endocrine and Reproductive Physiology and Pharmacology.* Weight: 1½ per 9 weeks. Terms 3 and 4: Jan.-May. *Fellows and Staff*

*PHS-405(B). *Contractile Processes in Physiology and Pharmacology.* Weight: 1½ per 9 weeks. Terms 1 and 2: Sept.-Jan. *Horowicz and Staff*

*PHS-407(B). *Membrane Transport Processes in Physiology and Pharmacology I.* Weight: 1 per 9 weeks. Terms 1 and 2: Sept.-Jan. *Tosteson and Staff*

*PHS-409(B). *Membrane Transport Processes in Physiology and Pharmacology II.* Weight: 1 per 9 weeks. Terms 3 and 4: Jan.-May. *Tosteson and Staff*

Psychiatry

Professor E. Busse, *Chairman*; Professors I. Alexander, K. Back, B. Bressler, R. Carson, B. Dai, C. Eisdorfer, J. Fowler, M. Lakin, H. Lowenbach, G. Maddox, J. McKinney, W. Obrist, J. Rhoads, W. Wilson; Professor Emeritus L. Hohman; Associate Professors J. Altrocchi, L. Borstelmann, M. Breslin, E. Clifford, H. Crovitz, B. Feather, I. Gehman, R. Green, H. Harris, P. Hein, F. Hine, A. Krugman, C. Llewellyn, E. Palmore, J. Reckless, G. Silver, L. Thompson, A. Verwoerdt; Assistant Professors W. Anderson, M. Baldwin, K. Barclay, E. Crovitz, E. Ellinwood, D. Fowler, D. Gianturco, J. Giragos, M. Huse, J. Jackson, D. Johnson, J. Jones, C. Keith, I. Kremen, M. LaBarre, D. Leventhal, D. Mayfield, C. Neville, Z. Pauk, E. Pfeiffer, K. Rockwell, M. Short, W. Shows, R. Tomlinson, H. Wang, M. Wertz, W. Zung; Assistant Clinical Professor P. Irigaray; Associates M. Amaya, H. Coppedge, G. Doss, E. Harkins, B. Hubbard, G. Polansky, E. Reilly, A. Sagberg, P. Walker, S. Workman

Instructors E. Crocker, T. Fox, J. Gallemore, T. Haizlip, F. Harrison, E. Heath, A. Jackson, H. Johnson, R. Kerr, M. Leventhal, J. Mallory, R. Martin, J. McNiel, J. Nunnally, N. Pfeiffer, M. Reedy, P. Schreiber, S. Singleton, P. Smith, M. Soloway, K. Thompson, A. Whanger, J. Williams; *Research Associates* F. Jeffers, R. Mishriky, F. Wilkie; Assistant D. Hey-

man; *Consultant* W. LaBarre; *Fellows* L. Bourque, F. Delse, G. Fillenbaum, M. Fisher, C. Guajardo, S. Hastings, M. Headrick, A. Klein, G. Marsh, J. Martin, J. McNiel, D. Peak, G. Preston, J. Rees, C. Rich, R. Schlossel, M. Troyer, F. Shah, L. Vanegeren, A. Whanger; *Chief Resident* J. Gallemore; Residents E. Allen, J. Bonner, L. Cancellaro, R. Demas, A. Derdeyn, R. Doyle, A. Grant, B. Hydrick, C. Patterson, D. Robinson; *Assistant Residents* D. Allen, G. Brown, A. Carter, S. Davis, R. Fisher, R. Friedel, J. Gergen, R. Kennan, S. Lee, L. Lipsius, B. Milgram, J. Nash, C. Norton, R. Ray, W. Scarborough, J. Shalley, M. Volow; *Psychology Interns* R. Boyarsky, W. Gentry, J. Mancusi, T. Maquire, R. Mihalick, S. Nowicki, J. Tyler, M. Tyler

Required Courses

Human Behavior and Psychiatry

In addition to required and elective courses in clinical psychiatry this Department offers, through its Division of Human Behavior, course work in the biological and behavioral sciences which form the bases of psychiatry and the psychological aspects of medicine. During the first year, 60 hours are devoted to Human Behavior (PSY-200). The required second year course in Clinical Psychology (PSY-201) is for seven weeks.

Elective Courses

PSC-202(B). *Philosophy of Science and Behavioral Sciences.* Weight: 1. Term 2: Nov.-Jan. *Hine*

PSC-203(B). *Experimental Design in Behavioral Research.* Weight: 1. Term 3: Jan.-March. *Carson*

PSC-213(B). *Personality Development I: Birth to Adolescence.* Weight: 2. Terms 1 and 3: Sept.-Nov., Jan.-March. *Harris, Borstelmann, and Clifford*

PSC-214(B). *Personality Development II: Adolescence to Old Age.* Weight: 2. Terms 2 or 4: Nov.-Jan., March-May. *Busse, Peak, and Staff*

PSC-215(B). *Comparative Personality Theory.* Weight: 1. Term 3: Jan.-March. *Crovitz and Krugman*

PSC-216(B). *Intelligence and Cognition.* Weight: 2. Term 4: March-May. *Carson and Staff*

PSC-237(B). *Language and Communication.* Weight: 1. Term 1: Sept.-Nov. *Green, Hein, and Staff*

PSC-250(B). *The Neural Substrates of Perception and Cognition.* Weight: 1. Terms 1 or 2: Sept.-Nov., Nov.-Jan. *Ellinwood*

PSC-289(B). *Autonomic Conditioning.* Weight: 1. Term 2: Nov.-Jan. *P. Hein*

PSC-291(B). *Psychophysiologic Methods in Animals and Humans.* Weight: 2. Term 2: Nov.-Jan. *P. Hein*

PSC-293(B). *Learning Theory and Psychopathology.* Weight: 2. Term 3: Jan.-March. *Feather*

PSC-295(B). *Anatomical Basis of Mind.* Weight: 2. Term 1: Sept.-Nov. *Short*

PSC-323(B). *Basis of Behavioral Pharmacology.* Weight: 2. Term 4: March-May. *Wilson, Reilly, Ellinwood, Short, and Mayfield*

PSC-230(C). *Clinical Research Preceptorship in Community Psychiatry.* Weight: 3. Every term. *Eisdorfer, Altrocchi, Maddox, B. Fowler, Lowenbach, Shows, and Giragos*

PSC-234(C). *Clinical and Experimental Psychopharmacology.* Weight: 3. Term 3 or summer term: Jan.-March, June-Aug. *Mayfield, Ellinwood, Short, and Wilson*

PSC-240(C). *Inpatient Psychiatry: Environmental and Somatic Therapy (A).* Weight: 8. Every term. *Green and F. Hine*

PSC-241(C). *Inpatient Psychiatry: Environmental and Somatic Therapy (B).* Weight: 6. Every term. *Green and F. Hine*

PSC-242(C). *Inpatient Psychiatry: Environmental and Somatic Therapy (C).* Weight: 3. Every term. *Green and F. Hine*

PSC-243(C). *Principles and Practice of Outpatient Psychiatry.* Weight: 3-8. Every term. *Fowler, Llewellyn, Rockwell, and Giragos*

PSC-245(C). *Psychosomatic Medicine.* Weight: 3-8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Reckless, Breslin and Short*

PSC-251(C). *Community Psychiatry and Mental Health.* Weight: 4-8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Llewellyn, Eisdorfer, Maddox, Rockwell, Giragos, Fowler, Altrocchi, and Lowenbach*

PSC-253(C). *Principles and Practice of Group Psychotherapy and Psychodrama.* Weight: 1-3. Terms 2, 3, or 4: Nov.-Jan., Jan.-March, March-May. *Reckless and Staff*

PSC-255(C). *Marriage Counseling in Medical Practice.* Weight: 1. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Llewellyn, Breslin, and Pfeiffer*

PSC-257(C). *Schizophrenia: Research and Clinical Aspects.* Weight: 1. Term 3: Jan.-March. *Tomlinson and F. Hine*

PSC-259(C). *Clinical Neurophysiology (EEG).* Weight: 3. Every term. *Wilson*

PSC-261(C). *Practice of Psychological Assessment Techniques.* Weight: 1. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Huse and Staff*

PSC-267(C). *Clinical Child Psychiatry.* Weight: 3-6. Terms 1, 2, 3, or 4 *or* Terms 1 and 2 *or* Terms 3 and 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May, Sept.-Jan., Jan.-May. *H. Harris*

PSC-271(C). *Alcohol and Drug Abuse I.* Weight: 1 per 9 weeks. Terms 3 and 4: Jan.-May. *Ellinwood, Mayfield, and Maddox*

PSC-272(C). *Alcohol and Drug Abuse II.* Weight: 3. Terms 3 or 4: Jan.-March, March-May. *Ellinwood, Mayfield, and Maddox*

PSC-297(B). *Biochemistry of Behavior.* Weight: 2. Term 3: Jan.-March. *Short*

PSC-299(B). *Preceptorship in Behavioral Science.* Weight: 1-8. Every term. *Eisdorfer and Staff*

PSC-301(B). *Psychophysiology Seminar.* Weight: 1. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, April-May. *P. Hein and Staff*

PSC-303(B). *Child Development and Mental Retardation.* Weight: 2. Terms 1, 3, or 4: Sept.-Nov., Jan.-March, April-May. *Harris and Staff*

PSC-305(B). *Social and Cultural Aspects of Illness.* Weight: 3. Term 4: March-May. *Maddox, Palmore, and Jackson*

PSC-315(C). *Pathology of Perception and Thinking.* Weight: 2. Term 3: Jan.-March. *Ellinwood*

PSC-317(C). *Forensic Psychiatry.* Weight: 1. Term 1: Sept.-Nov. *Pfeiffer*

PSC-321(B). *Neurophysiology and Behavior.* Weight: 2. Term 2: Nov.-Jan. *Wilson*

PSC-327(C). *Lectures in Clinical Psychopharmacology.* Weight: 1. Every term. *Mayfield, Ellinwood, Short, and Wilson*

PSC-329(C). *Family Unit, Structure, Pathology, and Therapy.* Weight: 1. Terms 3 or 4: Jan.-March, March-May. *Lowenbach*

PSC-331(C). *Dynamic Approach to Medical Problems Based on Psychoanalytic Theory.* Weight: 2-4. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May.

PSC-333(C). *Psychiatric Theory and Practice and the Therapeutic Community.* Weight: 9. Every term. *Neville, Workman, Mallory, and Johnson*

PSC-335(C). *Research Preceptorship in Clinical Psychiatry.* Weight: 3-8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Clinical Staff by arrangement*

PSC-337(C). *Geriatric Psychiatry.* Weight: 3-8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Busse, Peak, Verwordt, Wong, Palmore, and Staff*

PSC-339(C). *Preceptorships in Clinical Psychiatry.* Weight: 3-8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May.

Radiology

Professor R. Lester, *Chairman*; Administrator S. Paine; *Radiodiagnosis Division:* M. P. Capp, Director; Professor, G. Baylin, E. Van Epps; As-

sociate Professors W. Barry, J. Goree; Assistant Professors J. Chen, J. Jimenez, R. Rice; Associates J. Gehweiler, M. Jarmakani, S. Winkler; Instructors R. McConnell, A. Robinson, J. Williams; *Radiation Therapy Division:* Associate Professor P. Cavanaugh, Director; Professor J. Evans; Associate Professor B. Worde, Associate, H. Connell; Instructor, W. Bennett, Research Associate Raymond U.; *Nuclear Medicine Division:* Associate Professor J. Goodrich, Director; Assistant Professor R. Gorten, C. Harris; Associates R. Wilkinson, A. Wyrick; Instructor, H. Barnett; *Radiobiology Division:* Associate Professor A. Sanders, Director; Assistant Professor W. Currie; Associate G. Hill; *Radiation Physics Division:* Assistant Professor A. McCrea; *Radiation Technology:* Assistant Professor J. Cahoon, Chief Technician, J. Miller; *Clinical Staff:* Associate Clinical Professor O. Doyle; Assistant Clinical Professors R. McClelland, D. Monson, W. Sprunt; Clinical Associates G. Gray, J. Sherrill, G. Schlaseman, T. Thurston, J. Wear; *Radiation Safety:* Associate C. Knight

Residents N. Abramson, J. Atchison, J. Buchanan, S. B. Gerber, R. Gifford, R. Goebel, D. Grode, L. Grundy, J. Haslam, T. Hetherington, S. Martinez, L. Mazzochi, G. McCord, E. McCormick, J. Poklepovic, A. Price, J. Ralsten, J. Sexton, J. Smith, L. Southworth, R. Thompson, T. Thompson, T. Vance, T. Vauchan, J. Carranza

During the first year, radiology is not taught as a separate course but is correlated in many of the established teaching programs. In the second year, Radiology (RAD-200) is taught in a two-hour seminar each week throughout the year. Therapeutic Radiology and Nuclear Medicine are taught in a similar manner.

Elective Courses

RAD-223(B). *Radioisotope Methods and Techniques in Biomedical Research.* Weight: 3. Term 1: Sept.-Nov. *Sanders and Currie*

RAD-225(B). *Methods and Techniques of Radiobiology—Subcellular.* Weight: 8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, April-May. *Sanders, Currie, Hill, and Evans*

RAD-227(B). *General Radiobiology.* Weight: 2. Term 3: Jan.-March. *Sanders, Currie, Hill, Evans*

RAD-207(C). *Pediatric Radiology.* Weight: 4. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Lester, Capp, and Chen*

RAD-209(C). *Clerkship in Neuroradiology.* Weight: 4. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March., March-May. *Goree, Jimenez, and Staff*

RAD-211(C). *Clerkship in Cardiovascular Radiology.* Weight: 4. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Johnsrude*

RAD-213(C). *Gastrointestinal Radiology.* Weight: 4. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Rice*

RAD-215(C). *Clinical Radiation Therapy.* Weight: 8. Every term. *Cavanaugh, Worde, Evans, Raben, Connell, and McCrea*

RAD-229(C). *Basic Radiology Clerkship.* Weight: 8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Lester and Staff*

RAD-231(C). *Clinical Nuclear Medicine.* Weight: 5. Terms 2 or 4: Nov.-Jan., March-May. *Gorten*

SUR-230(C). *Seminar in Urology and Uroradiology.* Weight: 2. Every term. *Glenn, Lester, Urology and Radiology Staff*

Surgery

Professor D. Sabiston, *Chairman*

Division Chiefs: (Urologic Surgery) Professor J. Glenn; (Orthopaedic Surgery) Professor J. Leonard Goldner; (Otolaryngology) Professor W. Hudson; (Neurosurgery) Professor G. Odom; (Plastic and Maxillofacial Surgery) Professor K. Pickrell; (Thoracic Surgery) Professor W. Sealy; (General Surgery) Professor W. Shingleton; (Anesthesiology) Professor S. Dent; (Dentistry) N. Ross

Professors D. Amos, W. Anlyan, L. Baker, J. Beard, S. Boyarsky, F. Clippinger, E. Day, J. Dees, N. Georgiade, K. Grimson, W. Peete, R. Postlethwait, G. Quinn, J. Semans, B. Woodhall, W. Young; Professors Emeritus E. Alyea, D. Hart; Associate Professors F. Bassett, R. Bonar, E. Clifford, M. Dillon, P. Ebert, R. Gregg, K. Hall, B. Hills, D. McCollum, B. Nashold, D. Silver, W. Smith, D. Stickel; Associate Clinical Professors J. Davis, T. Takaro; Assistant Professors E. Anderson, R. Chen, A. Ferrari, P. Kenan, N. Kirshner, P. Labay, M. Mahaley, J. Malin, F. Mauney, R. Mladick, S. Patterson, H. Seigler, I. Talton, V. Vartanian, R. Wilkins; Assistant Clinical Professors E. Bugg, R. Coonrad, G. Ferguson, J. Glasson, L. Mason, C. Patterson, L. Roberts, M. Schiebel, S. Scott; Associates W. Abbey, D. Beard, R. Benway, P. Breen, A. Craddock, B. King, J. King, F. Knobeloch, R. Massengill, B. Sapp, R. Snider; Clinical Associates M. Bourgeois-Gavardin, W. Hollister, S. Kapoor, J. Kouns, E. Lloyd, T. Pope, N. Schupper, E. Staub; Research Associates R. Fritz, R. Georgiade, L. Gottsch, A. Langlois, J. Riman, L. Sverak, A. Thiele; Clinical Lecturers D. Boyer, G. King, L. Meyer, G. Miller, O. Miller, R. Musgrave, W. Roberts, F. Stelling; Instructors M. Campbell; Clinical Instructors G. Carver, J. Coppridge, C. Dart, H. Deaton, S. Hobart, J. Hughes, W. Inabnet, G. Lazenby; Fellows C. Chen, K. Chen, H. Iwahashi, M. Yokoyama, F. McGregor, E. Gonzales, H. Kim, D. Soderdahl; Interns D. Barker, J. Curtis, R. Davis, W. Ellis, G. Fletcher, J. Goodnight, N. Green, F. Hambrecht, J. Hammon, J. Hart, W. Hines, J. Hollingsworth, F. Hutchinson, T. Kjerulf, G. Maroulis, D. Melvin, R. Perryman, G. Poehling, E. Polotwicz, R. Ruderman, C. Taft

Required Courses

The required course in Surgery (SUR-200) is given in Year 2 and consists of a seven-week term for each student.

A second required course, Emergency and Disaster Surgery (SUR-337), is given during the second year for one week.

Elective Courses

SUR-201(C). *Advanced Clinical Surgery.* Weight: 8. Term 1 or 3: Sept.-Nov., Jan.-March, *Shingleton and Peete*

SUR-203(C). *Survey of Pulmonary, Esophageal, and Cardiovascular Surgery.* Weight: 8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Sabiston, Sealy, Brown, Young, and Resident Staff*

SUR-206(C). *Surgical Aspects of Thoracic Disorders.* Weight: 6. Every term. *Young and Sealy*

SUR-207(C). *Surgical Cardiology.* Weight: 8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Sabiston, Sealy, Young, and Resident Staff*

SUR-208(C). *Rehabilitation Medicine.* Weight: 1-6. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Gregg and Staff*

SUR-213(C). *Homotransplantation of Organs.* Weight: 2. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Stickel, Seigler, and Amos*

SUR-215(C). *Surgical Disease of Blood Vessels and Lymphatics.* Weight: 1. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Silver*

SUR-217(C). *Surgery of Trauma.* Weight: 4. Term 1 or 3: Sept.-Nov., Jan.-March. *Shingleton and Peete*

SUR-219(C). *Advanced General and Thoracic Surgery.* Weight: 8. Every term. *Mauney, Silver, Dillon, Seigler, Stickel, and Postlethwait*

SUR-221(C). *Surgical Specialties and Ophthalmology.* Weight: 8. Every term. *Silver, Boyarsky, Chandler, Hudson, McCollum, Pickrell, and Wilkins*

SUR-223(C). *Medical and Surgical Renal Disease.* Weight: 8. Every term. *Glenn, Robinson, and Respective Staffs*

SUR-225(C). *Investigative Urology.* Weight: 8. Terms: 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Boyarsky, Glenn, Dees, Labay, Barry, Gregg, Malin, Semans, and Staff*

SUR-227(C). *Clinical Urologic Surgery.* Weight: 8. Every term. *Glenn, Dees, Boyarsky, Anderson, and Staff*

SUR-230(C). *Seminar in Urology and Uroradiology.* Weight: 2. Every term. *Glenn, Lester, Urology and Radiology Staff*

SUR-233(C). *Basic Neurosurgery Course.* Weight: 1. Terms 1, 2, 3,

or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Odom, Nashold, Mahaley, and Wilkins*

SUR-235(C). *Clinical Neurosurgery.* Weight: 8. Every term. *Odom, Nashold, Mahaley, and Wilkins*

SUR-237(C). *Investigative Neurosurgery.* Weight: 8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Odom, Nashold, Mahaley, and Wilkins*

SUR-239(C). *Clinical Otolaryngology.* Weight: 6. Every term. *Hudson and Kenan*

SUR-240(C). *Otolaryngologic Seminar.* Weight: 1. Every term. *Hudson and Kenan*

SUR-241(C). *Medical Audiology and Speech Pathology.* Weight: 5. Every term. *Mr. King and Dr. Massengill*

SUR-245(C). *Reconstructive Plastic Surgery.* Weight: 6. Every term. *Pickrell, Georgiade, and Staff*

SUR-248(C). *Investigative and Clinical Approach to Wound Healing, Including Tissue Preservation, Microbiology of Burns.* Weight: 6. Every term. *Georgiade, Pickrell, and Staff*

SUR-249(C). *Speech and Hearing Problems in Children with Clefts of the Lip and Palate.* Weight: 5. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan-March, April-May. *Massengill, Pickrell, Hudson, and Staff*

SUR-250(C). *Clinical Acute Respiratory Physiology.* Weight: 2. Every term. *Hall, King, Mr. Anderson, and Mrs. Scheuer*

SUR-252(C). *Clinical Anesthesiology II.* Weight: 8. Every term. *Dent, Hall, Vartanian, and King*

SUR-253(C). *Anesthesiology Research.* Weight: 8. Every term. *Hall*

SUR-255(C). *Medical Speech Pathology.* Weight: 1. Every term. *Massengill*

SUR-257(C). *Medical Speech Pathology Applied to Reconstructive Plastic Surgery.* Weight: 1. Every term. *Massengill*

SUR-259(C). *General Principles of Orthopaedics.* Weight: 8. Every term. *Goldner, Baker, Clippinger, McCollum, Bassett, and Staff*

SUR-261(C). *Office and Ambulatory Orthopaedics.* Weight: 8. Every term. *Goldner, and all senior staff at Duke, Watts and Durham V.A. Orthopaedic services. Students may select individual instructor*

SUR-263(C). *Orthopaedics in the Community Hospital.* Weight: 8. Every term. *Bugg, Glasson, Coonrad, Kapoor, and Staff*

SUR-265(C). *Cerebral Palsy and Other Musculoskeletal Abnormalities.* Weight: 8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Goldner and Staff of Orthopaedic Service, Duke and North Carolina Cerebral Palsy Hospital*

SUR-267(C). *Clinical Conference in Cerebral Palsy.* Weight: 4. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Baker, Goldner, Bassett, and North Carolina Cerebral Palsy Hospital Staff*

SUR-269(C). *Upper Extremity Surgery and Reconstruction.* Weight: 8. Every term. *Goldner, Clippinger, McCollum, Bassett, and Staff*

SUR-271(C). *Arthritis—Spine and Extremities.* Weight: 8. Every term. *McCollum, Goldner, and Medical Rheumatology Staff*

SUR-273(C). *Athletic Medicine—Physical Conditioning and Management of Injuries.* Weight: 8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. *Baker, Clippinger, Bassett, and Orthopaedic Staff*

SUR-275(C). *Electromyography.* Weight: 2. Every term. *Clippinger, Goldner, and Orthopaedic Staff*

SUR-277(C). *Orthopaedic Research.* Weight: 8. Every term. *Goldner, Orthopaedic Senior Staff, and House Staff*

SUR-279(C). *Orthopaedic Amputee Program—Clinics, Surgery, and Prosthetics.* Weight: 4. Every term. *Goldner, Clippinger, Mr. Titus, Mrs. Horton, other members of the Physical Therapy Staff, and the Duke Prosthetics Department*

SUR-281(C). *Introduction to Fractures and Musculoskeletal Trauma.* Weight: 3. Every term. *Entire Senior Staff at Duke and Watts, supervision by Dr. Goldner at Duke, Dr. McCollum at V.A., and Dr. Bugg at Watts*

SUR-283(C). *Orthopaedics of Infants, Children, and Adolescents.* Weight: 8. Every term. *Goldner, Baker, Clippinger, McCollum, Bassett, Stelling, Meyer, Miller, Bugg, Coonrad, Glasson, Kapoor, Lincoln, and Musgrave*

SUR-285(C). *Advanced Surgery: General and Thoracic.* Weight: 8. Every term. *Sabiston and Staff*

*ANA-206(B). *Anatomy of Back and Extremities.* Weight: 3. Term 3: Jan.-March. *Markee and Bassett*

*ANA-208(B). *Anatomy of the Trunk.* Weight: 2. Term 3: Jan.-March. *Markee and Duke*

*ANA-216(B). *Anatomy of the Head.* Weight: 2. Term 4: April-May. *Markee and Everett*

ANA-256(B). *Surgical Neuroanatomy.* Weight: 1. Terms 2 or 4: Nov.-Jan., April-May. *Mahaley*

CTP-209(C). *Survey of Cancer, Clinical and Basic.* Weight: 8. Terms 1 or 3: Sept.-Nov., Jan.-March. *Shingleton, Laszlo, Porter, Heyden, and Johnston*

PSC-331(C). *Dynamic Approach to Medical Problems Based on Psychoanalytic Theory.* Weight: 2-4. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May.

Health Related Professions

Cytotechnology

Assistant Professor W. Johnston, *Director*; Assistant Professor M. Vazquez, *Assistant Director*; Instructor J. Amatulli; and Staff of Department of Pathology as required in special phases of instruction.

The School of Cytotechnology at the Department of Pathology offers a twelve-month course in technical and diagnostic aspects of exfoliative cytology to qualified individuals. The minimum qualifications are twelve semester hours of biology, which may include anatomy, histology, zoology, botany, and physiology, and at least two years of college. The common practice is to admit individuals with B.S. or A.B. degrees and only in exceptional cases applicants with incomplete college requirements will be considered.

The program consists of two parts. Part I—six months, primarily theoretical and practical exercise in the techniques of exfoliative cytology and interpretation of the clinical material. Part II—six months practical training in all aspects of exfoliative cytology in participating in the routine work of the laboratory. One class is accepted annually on November 1. Graduates of this course are awarded a certificate and are eligible to take the certifying examinations given by the Registry of Medical Technologists of the American Society of Clinical Pathologists. There is no tuition fee. Additional information about the School of Cytotechnology and ap-

plications for admission may be obtained from William Johnston, M.D., Department of Pathology, Duke University Medical Center, Durham, North Carolina.

Dietetics

Acting Director M. H. McLachlan; Assistant in Education A. Molleson; Administrative Dietitians M. Solomon, N. Curtis, C. Conely and B. Sowter; Research Dietitians V. Murphy and C. Herring; Clinic Dietitian C. Wason; Therapeutic Dietitians J. Black, M. J. Crawford, C. Fluke, R. Fox, S. Pitz, M. Ramsey, A. Sites

A Dietetic Internship Program is offered to men and women who have earned a bachelor's degree in Food and Nutrition or Institutional Administration and meet the course requirements of the American Dietetic Association. The twelve months of post-baccalaureate work consists of classroom instruction and clinical experience in administration, therapeutics, research, and education. After the successful completion of the Dietetic Internship, certificates and membership in the American Dietetic Association are awarded. For further information write:

Department of Dietetics
Duke University Medical Center
Durham, North Carolina

Hospital Administration

Professor C. Frenzel, *Director;* Assistant Professor D. S. Smith, *Coordinator;* Professors L. Clark, T. Keller; Associate Professor L. Swanson; *Instructor* K. Schoonhagen

Clinical Lecturer E. C. Bryson; *Clinical Associate* M. Pickens; *Clinical Instructors* J. Felts, G. Harris, H. Rowland, B. McCall, J. J. Hayes, C. Cobb, E. McCauley, G. Mack, H. Veit; *Clinical Preceptors* W. Andrews, J. Barnes, H. Bettis, R. Holmes, T. Howerton, J. Moulton, J. Pyne, M. Yount

Graduate education for hospital administration is offered through a 24-month program conducted jointly by the Graduate School and the Medical Center. The Program consists of selected graduate courses in business administration, political science, sociology, and hospital administration, and of a twelve-month administrative residency in hospitals and other health agencies. The Master of Hospital Administration degree is awarded to those who successfully complete the Program.

Detailed information may be obtained from:

Graduate Program in Hospital Administration
Box 3018
Duke University Medical Center
Durham, North Carolina

Medical Technology

Professor T. Kinney, *Director*; Associate Professors J. Goodrich, A. W. Musser, *Associate Director*; S. Osterhout, C. Zmijewski; *Assistant Professors* R. Blaker, W. Kremer, H. Silberman, G. Spooner; Instructor R. Habig; *Teaching Supervisor and Registrar* M. Britt; *Assistant Registrar and Instructor* L. Garriss; Instructors E. Bumgarner, A. Proctor
Clinical Instructors J. Carr, J. Fletcher, C. Harrison, N. Lester, A. Walker, I. Wyatt

The School of Medical Technology offers a twelve-month internship program of instruction and rotation through the clinical laboratories of the Duke University Medical Center and the Veterans Administration Hospital.

The internship program is open to men and women who have either a baccalaureate degree or a minimum of three years of college (in an accredited college or university) with plans for receiving such a degree from the preparatory college upon completion of the internship program. Applicants must have successfully completed at least 90 semester (135 quarters) hours which include:

Chemistry—minimum of 16 semester hours (24 quarter hours) which includes one full year of general college chemistry. The remaining courses may be selected from qualitative, quantitative, organic, physical, or biochemistry. (One semester of quantitative analysis is strongly recommended.) All courses must include lectures and laboratories.

Biological Sciences—minimum of 16 semester hours (24 quarter hours). All required biological sciences must include lecture and laboratories. Courses may be selected from general biology, zoology, botany, physiology, comparative anatomy, parasitology, histology, histologic technique, genetics, or bacteriology. (Bacteriology is strongly recommended.)

Mathematics—minimum of 3 semester hours.

Courses in physics are recommended but not required. Electives may be selected from English, social sciences, arts, and humanities.

Courses taught during the Internship include clinical biochemistry, clinical microscopy, radioisotope theory, microbiology (bacteriology, mycology, virology), immunohematology, parasitology, introduction to

clinical pathology, serologic techniques and histologic techniques. (Classes begin on July 1.)

Students are given a certificate upon completion of the Internship program and are qualified for examination and certification by the Registry of Medical Technologists of the American Society of Clinical Pathologists. They are eligible for membership in the American Society of Medical Technologists. This program is approved by the Council on Medical Education and Hospitals of the American Medical Association.

A $25.00 non-refundable registration fee is required upon acceptance in the program. This is applied toward the $50.00 breakage fee which is payable upon entrance. Students will be furnished rooms in dormitories and will receive a grant-in-aid of $100 a month. Students are required to participate in the Hospital Insurance plan, furnish their own white uniforms, white shoes, and meals. Laundry of uniforms is furnished by the Medical Center. Students can expect to spend $50 to $75 for books during the year.

For further information and/or application blanks, write to: Registrar, School of Medical Technology, Department of Pathology, Duke University Medical Center, Durham, North Carolina 27706

Nuclear Medicine

Professor R. Lester, *Chairman of the Department of Radiology*; Associate Professor J. Goodrich, *Director of Nuclear Medicine Division*; Professor G. Baylin; Associate Professors P. Cavanaugh, A. Sanders; Assistant Professors R. Gorten, C. Harris; Associate A. Wyrick, R. Wilkinson

Instructor H. Barnett; *Radiological Safety Officer* C. Knight

The School of Nuclear Medicine Technology offers a twelve-month program of instruction and clinical training in the Division of Nuclear Medicine, Department of Radiology. The program is divided into two parts: a three month intense didactic and laboratory preclinical course followed by a nine-month internship in the clinical aspects of Nuclear Medicine Technology. The nine-month internship is available only to those who successfully complete the preclinical course.

The three-month preclinical course covers such topics as nuclear physics and instrumentation, nuclear chemistry, radiation safety and health physics, mathematics, and radiation biology. Classes meet five and one-half days per week and consist of lectures, classroom demonstrations, laboratory sessions, and seminars.

The nine-month internship consists of scheduled rotation through all areas of the clinical laboratory. Personal instruction and training are given in blood volume-red cell mass determinations, renograms, scanning, research techniques, thyroid function studies, placental localization, ultra-

sound technique, and many others. This period of training is also augmented with continued classroom and laboratory work.

Students who successfully complete the nine-month internship receive a certificate and are qualified for examination by nuclear medicine technology registries.

Applications will be accepted for consideration from the following:

1. Students who have earned two years or more of college credit toward a degree in any field of science.
2. Registered or registry-eligible medical technologists.
3. Registered or registry-eligible radiologic technologists.
4. Registered nurses.

All applications must be submitted by May 1. The admissions committee will review all applications at that time and notify all applicants by May 15, regarding their admission to the school.

A tuition fee of $100.00 is required upon acceptance and is payable to the Division of Nuclear Medicine. If an applicant withdraws before August 1, this fee is refunded. After August 1, no refunds are made. The cost of books and supplies is approximately $50.00. Laboratory coats and laundry service are furnished by the Medical Center.

Students who successfully complete the three-month preclinical course and enter the nine-month internship receive a monthly stipend of $100.00.

For further information or application forms, write to Huey D. Barnett, Box 3166, Division of Nuclear Medicine, Duke University Medical Center, Durham, North Carolina, 27706.

Nurse Anesthesia

Professor Sara J. Dent, *Chairman, Department of Anesthesiology*; Instructor M. Campbell, *Director of School of Anesthesia for Nurses*; M. Gardner, *Educational Program Director*; Assistant Nurse Anesthetists L. Glenn, F. Perry, A. Truitt, M. Haigler, A. Moody, G. Cowan, F. Ivey, R. Johnson, J. Ralph, G. O'Briant, N. Nelms, S. Blake, S. Crowder, W. Doll, M. Friedman, G. Jackson, P. Palmer, J. Armstrong, P. Gamburg, L. Phillips

The twenty-four month course in anesthesia is available to well-qualified registered nurses. Instruction embraces the theoretical aspects and clinical application of all drugs and techniques in accepted usage. The program is divided into quarters. The major part of the basic theoretical instruction is given during the first three quarters. After a preclinical period of eight weeks, clinical practice runs parallel with the theoretical program. One class is accepted annually and enrolled in January.

All appointments of the current year are made by September 1 of the preceding year. Graduates of this course are eligible to take the qualifying examination for membership in the American Association of Nurse Anesthetists. Tuition is $150.00. Additional information concerning nurse anesthesia may be obtained from Mary B. Campbell, C.R.N.A., P.O. Box 3204, Duke University Medical Center, Durham, North Carolina.

Physical Therapy

Assistant Professor M. Jacobs, *Director*; Associate Professor H. Kaiser; R. Federchuck, *Director of Physical Therapy Services*; J. Barr, *Secretary-Recorder*; F. Gehweiler, *Coordinator of Clinical Education*

Associate E. Blumenthal; *Instructors:* J. Barr, J. Cantey, R. Federchuck, G. Horton, E. Villanueva; *Clinical Instructors:* B. Baker, B. Denny, C. Gervin, S. Herzog, G. Hutcheson, J. Nelson, K. Randolph

The curriculum in Physical Therapy is conducted under the joint auspices of the Graduate School and the Medical Center. Two programs are offered. One leads to a Certificate in Physical Therapy and the other to a Master of Arts degree and a certificate. Graduates of either program are eligible for state and national qualifying examinations and membership in the American Physical Therapy Association.

Requirements for admission are a baccalaureate degree, completion of prerequisite courses and satisfactory scores on the Graduate Record Examination. Basic prerequisites are courses in mathematics (through beginning calculus), psychology, and laboratory courses in biology, chemistry (inorganic and organic), and physics.

The 15-month Certificate Program in Physical Therapy includes courses in anatomy, physiology, pathology, kinesiology, physical therapy, and rehabilitation as related to the medical and surgical specialties, administration, physical therapy procedure courses and a period of supervised clinical experience at Duke University Medical Center, affiliated hospitals, rehabilitation centers, and public health facilities.

The program leading to a Certificate in Physical Therapy and a Master of Arts degree may be completed in two years. Students specializing in Physical Therapy may request admission to the Graduate School and, if admitted, follow the curriculum for the Master of Arts degree in any of several related fields. Admission must be through the appropriate graduate department. Selected physical therapy courses are integrated with the graduate courses throughout the two-year period.

Tuition and fees are $1,800 for the 15-month Certificate Program and $2,025 for the program leading to a Certificate in Physical Therapy and a Master of Arts degree.

For further information, write to the Director of Physical Therapy, Box 3247, Duke University Medical Center, Durham, N.C. 27706.

Prosthetic and Orthopaedic Appliances

Assistant Professor B. Titus, *Director*; Assistant Prosthetist and Orthotist R. Gooch; Assistant Orthotist P. Ray

The function of this Department is to produce prosthesis and orthopaedic appliances for the medical profession. Facilities for individual training in specific techniques or methods employed by this Department are available. Those who complete four years' training are eligible to take the examination of American Board of Certification.

Radiologic Technology

Professor R. Lester, *Chairman of the Department of Radiology*; Assistant Professor J. Cahoon, *Director of the School of Radiologic Technology*; Professor G. Baylin; Associate Professors W. Barry, M. Capp, J. Goree, B. Worde, P. Cavanaugh; Assistant Professors I. Johnsrude, A. McCrae; Assistant to the Director B. Holtzman

Technical Instructors J. Miller, E. Porter, D. Riley, C. Campbell, J. Stroud, B. Holtzman, V. Moody, M. Ahbe, J. Tennant, G. Carlson, B. Coman; *Radiological Safety Officer* C. Knight

The School of Radiologic Technology in the Department of Radiology offers students interested in the allied health sciences three programs of instruction.

The first, open to high school graduates and those with some college experience, consists of two calendar years of instruction and clinical training leading to certification by the American Registry of Radiologic Technologists.

The second, in affiliation with Elon College, enables students to obtain a Bachelor of Science degree in radiologic technology along with ARRT certification.

The third program provides a one-year graduate curriculum in either neuroradiography or vascular radiography for registered radiologic technologists.

The Duke School of Radiologic Technology is approved by the American College of Radiology, the American Medical Association's Council on Medical Education, the American Society of Radiologic Technologists, and the American Registry of Radiologic Technologists.

Certificate Program

Students participating in the two-year certificate program receive both academic and clinical training in all aspects of radiologic technology. At the conclusion of the program, the student is eligible to take the national board examinations sponsored by the American Registry of Radiologic Technologists. A student must pass the national boards before he is awarded a diploma from the school.

Candidates for admission must be graduates of accredited high schools and rank in the upper third of their class. Applicants with one or more years of college credit, however, are given priority.

Official transcripts of high school and/or college grades, a list of three references and a recent photograph must be included with a student's application. The school recommends that students be between the ages of 19 and 30 at the time of enrollment.

Final deadline for applications is July 15. A $2 application fee made payable to the School of Radiologic Technology must accompany each application.

Students accepted into the program are required to pay a non-refundable $100 registration fee to the University by July 1. Books, supplies and uniforms cost approximately $175. Laundry of uniforms is provided by the medical center.

At the end of six months, if the student's work has been unsatisfactory or shows inaptitude for work in radiologic technology, he is advised to withdraw from the course.

At the successful completion of the first year of the course, the student receives a stipend of $100 per month during his second year.

The Baccalaureate Program

Students pursuing a B.S. degree in radiologic technology take two years of work in liberal arts at Elon College and then come to Duke for the last two years of clinical training.

The program was established to resolve the acute shortage of radiologic technologists qualified for instructional and administrative positions.

Students receive the B.S. degree in radiologic technology from Elon College and a certificate from Duke after passing the national board examinations and the Duke section of the course.

Students entering this program must fulfill all entrance requirements of Elon College. Acceptance is based on high school records with emphasis on a student's rank in his class. Recommendations, scores on the Scholastic Aptitude Test of the College Entrance Examination Board, and scores on tests given by the high school are also considered. The completed application must be submitted to Elon College by March 1. A non-refundable application fee made payable to Elon College must be submitted with the application.

Upon acceptance, students must send a $35 acceptance fee and a $50 room reservation fee. Tuition, room, and board charges total $1,585 each year at Elon. The acceptance fee and room reservation fee are subtracted from this total. Books and other expenses at Elon are estimated at $100 per year.

At Duke, $100 tuition must be paid to the University by July 1 prior to the third year. Books, supplies, and other expenses at Duke are estimated at $175.

Upon successful completion of three years of the program, the student receives a stipend of $100 each month during his final year.

Graduate Curriculum

The graduate program, open only to registered radiologic technologists, provides a one-year course in either neuroradiography or vascular radiography. The course consists of clinical work, with some research and experimental investigation. Students participating in the graduate curriculum are granted a $100 stipend each month during the calendar year.

No living quarters are provided for paramedical students by Duke University, and students in radiologic technology live in town at their own expense. For further information or application blanks, write to John B. Cahoon, Jr., R.T., Director, School of Radiologic Technology, Duke University Medical Center, Durham, North Carolina, 27706.

Veterinary Medicine

Associate Professor J. LeMay, *Chairman*; Associates B. Sherwood, J. Vekilvadeh

The function of this Department is to facilitate the various teaching and research programs that require laboratory animals. Veterinary medical consultation is provided for research projects in which experiments are conducted on animals. Assistance is made available in selecting the most suitable species or strain of laboratory animal to use in a given study. In addition, animals are procured, quarantined, and appropriately conditioned in order to provide a highly reliable biological tool. A wide variety of technical services are carried on, such as providing whole blood of a variety of species, collecting biological specimens, providing clinical pathologic examinations, preparing animals for surgery, postsurgical care, and maintenance of the animal colonies.

The Department collaborates with those departments of the School of Medicine that utilize laboratory animals in their teaching programs. Various disease states are experimentally produced in animals for student observation and study, and techniques for collecting biological speci-

mens for additional study are demonstrated. Aid is given in setting up and carrying out these demonstrations and studies on animals.

The Veterinary medical staff teaches an introductory course in animal experimentation which is a required couse for physician's assistant trainees. Plans are under way to make this course available to others and offer additional courses of study.

Research programs on some of the spontaneous diseases of laboratory animals are carried out by the staff both independently and with other Medical Center investigators.

Inhalation Therapy

The School of Inhalation Therapy is under the medical direction of the Department of Anesthesiology. It is accredited by the Council on Medical Education of the American Medical Association.

An eighteen-month course is offered which combines didactic instruction and on-the-job training. Approximately ten students are enrolled in this school each year. Graduate students are qualified to participate in National Board Exams. Associate degree programs are under development and will be offered by 1970.

All applicants must be high school graduates. Previous medical experience is desirable. A stipend commensurate with background and experience is offered. For detailed information, write to Houston R. Anderson, Director, School of Inhalation Therapy, Box 3094, Duke University Medical Center, Durham, North Carolina 27706.

Physician's Assistant Program

Professor E. H. Estes, Jr., *Chairman*; D. R. Howard, *Program Director*; J. C. Mau, *Administrative Director*; D. E. Lewis, *Director of Education*. Associate Professors W. O. Dobbins, C. P. Hayes, J. A. Kylstra, J. C. LeMay, H. A. Saltzman, and A. G. Wallace. Assistant Professors F. P. Dalton, C. J. Gerber, R. F. Klein, and J. A. McFarland. Associate B. F. Sherwood

Instructors K. G. Andreoli, J. A. Braun, S. R. Fortney, T. A. Huff, F. R. Johnston, J. J. McQueary, R. F. Neelon, A R. Price, C. P. Roe, and W. I. Sims

The Physician's Assistant Program, initiated in 1965, is designed to develop a new category of intermediate level professional assistants who will function as a member of the health team under the direction of physicians for the purpose of assisting them in areas of clinical and research endeavors.

The twenty-four month program is divided into a nine-month preclinical didactic section and a fifteen-month clinical section. The didactic section includes courses in history, Philosophy and Ethics of Medicine, Introduction to Basic Clinical Laboratory, Medical Records and Terminology, Introduction to Animal Experimentation, Introductory Chemistry, Anatomy and Physiology, Pharmacology, Metabolism, Advanced Laboratory and Clinical Procedures, Introduction to Clinical Medicine, Community Health, Medical Instrumentation, Physical Diagnosis, Introduction to Radiology, Fundamentals of Electrocardiography, and Basic Principles of Data Processing. The clinical section includes forty weeks of mandatory rotations and twenty-four weeks of elective rotations. Emphasis during the clinical experience is available in medicine, surgery, pediatrics, and several subspecialty areas.

Candidates for admission must be high school graduates with courses in math, chemistry, and biology and have at least three years of experience in the health field. There is no charge for tuition and the program is approved by the Veterans Administration for G. I. Bill benefits. Money is available to provide a stipend for those who are ineligible for veterans benefits and to supplement the benefits of those attending on the G. I. Bill. The program is in a period of rapid growth and expansion which will accommodate increased numbers of students in the future. For further information, write to: Program Director, Physician's Assistant Program, P. O. Box 2914, Duke University Medical Center, Durham, North Carolina, 27706.



The School of Nursing

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General Information

Philosophy of the School of Nursing

The School of Nursing functions within the philosophy of Duke University. This philosophy is epitomized by its motto, *Eruditio et Religio*, which "reflects a fundamental faith in the union of knowledge and religion, the advancement of learning, the defense of scholarship, the love of freedom and truth, a spirit of tolerance, and a rendering of the greatest service to the individual, the state, the nation and the church. Through changing generations of students, the objective has been to encourage each individual to achieve to the extent of his capacities an understanding and appreciation of the world in which he lives, his relationship to it, his opportunities, and his responsibilities."

The faculty of the School of Nursing ascribes to the concept that a professional nurse is a person who has acquired the specialized knowledge of nursing, who has attained abilities useful in practice of nursing, and who has developed attitudes appropriate to the profession of nursing.

The faculty conceives professional nursing to be a service which contributes to the health and well being of people. Professional nursing practice is dealing with human beings under stress, frequently over long periods of time; providing comfort and support in times of pain, anxiety, loneliness, and helplessness; perceiving, evaluating, and intervening appropriately; administering medications and treatments; using clinical nursing judgment in establishing, maintaining, and/or modifying a plan of

care; and knowing when and how to use existing and potential resources to help patients toward recovery and adjustment. Professional nursing practice is sharing responsibility for the health and welfare of all those in the community; participating in programs designed to prevent illness and maintain health; coordinating professional and technical services in the best interest of patient care; and supervising, teaching, and directing all those who give nursing care. Professional nursing practice requires constant evaluation; asks questions and seeks answers which will add to the body of nursing theories; and transmits and uses the theories, as well as other research findings, to improve services to patients and service programs to people. Professional nursing practice requires knowledge and skill of high order and provides opportunities for personal and professional fulfillment.

The faculty believes that the primary aim of nursing education is to provide an environment in which the student can develop self-discipline, intellectual curiosity, the ability to think critically, and acquire the knowledge necessary for practice. The faculty believes that learning is manifested by change of behavior, resulting from experience; that an atmosphere for learning is one in which systematic direction and guidance of the learner is offered in a climate which encourages self-direction and creativity; that professional nurse education implies that the student who seeks admission to the school comes with the intent of practicing professional nursing; and, that the curriculum offered aids the student in realizing this intent and in stimulating the desire for continued professional growth.

The School of Nursing is committed to promoting human health and welfare through providing foundations for knowledgeable nursing services and is committed to contributing to the attainment of the University's aims of teaching, research, and public service.

The school aims to prepare its graduates to function as practitioners of professional nursing in roles most appropriate to the level of their preparation. The school aims to provide its students with an educational background which will serve as a basis for advanced study in nursing, and for continued personal and professional growth.

History

The School of Nursing of Duke University was established in association with the School of Medicine and Duke Hospital. The first class of students was admitted in January, 1931. In 1953, the School of Nursing was incorporated into the Division of Health Affairs in the University structure. When established, the three-year curriculum leading to the Diploma in Nursing was planned to prepare young women to meet com-

munity nursing needs; students who completed two years of acceptable college work were awarded a Bachelor of Science degree in Nursing in addition to the Diploma in Nursing. Trends in nursing created a demand for a four-year program leading to the degree of Bachelor of Science in Nursing, and in 1953, the University Board of Trustees approved such a program. The Master of Science in Nursing Degree was authorized in 1956.

Graduates of Duke University School of Nursing have served their communities in North Carolina and in other states; they have participated in their professional organizations on a national, state, and local level. During World War II, graduates of this school staffed the 65th General Hospital of the Duke University Medical Unit.

Relationship to the University

As a part of the University community, the School of Nursing serves its students as the focus of a total educational experience that only a major university can provide. It shares the same campus with Trinity College, School of Engineering, the Graduate School, the Divinity School, and the Schools of Law, Medicine, and Forestry, and Duke Medical Center. The facilities for library, laboratory, and field work, and the many activities—religious, intellectual, cultural, and athletic—form part of the environment which contributes to the development of students in nursing. Thus, the student in nursing may enjoy simultaneously the broad facilities and challenges of a University and the life and atmosphere of a professional school.

Membership and Accreditation

Duke University, which incorporates the School of Nursing with all of the other schools of the University, is a member of the Association of American Colleges and is accredited by the Southern Association of Colleges and Secondary Schools.

The generic program leading to the degree of Bachelor of Science in Nursing is accredited by the National League for Nursing and the North Carolina Board of Nursing.

The School is a member of the Department of Baccalaureate and Higher Degree Programs of the National League for Nursing.

Undergraduate Course of Study and Requirements for Degree

Bachelor of Science in Nursing

The School of Nursing, through its Division of Undergraduate Studies, offers a program which can be completed in four academic years, leading to the Bachelor of Science in Nursing degree. The graduate is eligible to apply for examination for licensure as a registered nurse in any state.

The general purpose of the program is to offer educational opportunities which will enable the student's maximal growth toward his personal and professional goals. The program of studies unifies general and special education to the end that the graduate may effectively assume his responsibilities as a person, a citizen, and a professional practitioner.

The broad approach to nursing in various settings focuses on nursing care that is individualized and adapted to the unique personality and circumstances of the patient and his health state and potential. Thus the graduate is expected to find satisfaction in functioning as a beginning practitioner in institutions and agencies, or as a private practitioner.

The student, with the guidance of his academic advisor, may elect courses and experiences which best serve his interests for concentration

in a special area of study or for exploration in several fields. Inherent in this approach is the foundation for continuing growth and for advanced study in accordance with the student's goals.

Program of Study

The baccalaureate program is designed to produce a professional nurse who has (1) an understanding and appreciation of man and his relationships, opportunities, and responsibilities in his dynamic environment, and (2) the knowledge, understanding, and skill essential in professional nursing. Studies in the freshman and sophomore years are devoted primarily to the liberal arts and basic sciences; during these years, cocurricular activities are provided to introduce the student to nursing. The focus of the junior and senior years is the nursing major. Transfer students can be readily accommodated in a curriculum of this design.

Course Requirements [1,2,3]

For graduation a student must have passed at least 32 semester-courses (or a combination of semester-courses, half courses, and double courses that would be equivalent to 32 semester-courses), including the approved curriculum. A student must have passed a minimum of 14 semester-courses before entering the upper division professional curriculum. The normal academic load is four courses per semester.

Lower Division

The following standard course requirements are included as lower division (freshman and sophomore years) course work:

Natural Science	2 courses
Humanities	1 course
Social Science (Sociology or Anthropology and Psychology)	3 courses
Human Ecology (N 96, 97)	2 courses
Basic Statistics	1 course
Physical Education[4]	.....
	9 courses

1. The curriculum for students who entered prior to September, 1968, is outlined in earlier *Bulletins*.

2. The nursing curriculum is under development and is, therefore, subject to change. Students should accept admission with this understanding.

3. Students who entered in September, 1968, are required to complete 2 courses in English Composition. Students admitted after 1968 are required either to demonstrate their ability to write good English, by meeting the standard accepted by the Undergraduate Faculty Council, or to pass one semester-course in English Composition, which they should take in their first semester.

4. This requirement may be met by satisfactory completion of two years in ap-

The remaining elective courses (approximately seven semester-courses) of the lower division are selected by the student, with assistance and approval from his academic adviser, in accordance with his goals and interests. No more than four courses in the military sciences may be counted toward a student's graduation.

Students entering in the Fall 1969, 1970, and 1971 are required to have the following varieties of learning experiences, to be fulfilled at some time during the freshman and/or sophomore year: (*a*) a seminar in one semester, or (*b*) two perceptorials, discussion sections, or tutorials.

Students entering in 1972 are required to have:

A. Freshman year.
   1. A seminar in one semester, or
   2. Two preceptorials, discussion sections, or tutorials.

B. Sophomore year.
   The same requirements as in the freshman year.

Upper Division

The third and fourth years are devoted to the professional curriculum. Nursing core courses comprise the third year of study. During the fourth year, in addition to certain core courses, there are opportunities for nursing and non-nursing electives and independent study.

The core of the nursing curriculum consists of both generalized and integrated content. Included are such areas as human growth and development, major health problems (with emphasis on varying levels of health and illness), psychological and physiological responses to stress, social theory, resources for maintaining good health or for obtaining health care, nursing skills, and responsible professional behavior.

The focus is on the nursing process—that is, on the process which unites nursing action with knowledge and decision-making. Based on science, the process involves a systematic approach to nursing and reflects, in its implementation, its interdependence with substantive content. It is taught as content, with emphasis on helping the student develop both cognitive and technical skills. As he learns to use the nursing process, the student augments, complements, and integrates broad backgrounds of social, biological, and psychological theory and experience.

Clinical experience, which begins early in the junior year, provides essential opportunities for the student to practice skills, internalize knowledge and the nursing process, and develop behaviors characteristic of the professional nurse.

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propriate physical education courses or by an alternate form of physical activity approved by the physical education department. The student must fulfill this requirement before entering the professional curriculum (upper division). The student receives letter grades for physical education courses but these grades do not count toward continuation, graduation, or honors, nor do physical activities count among the courses needed for graduation.

Under the appropriate faculty guidance, each student may choose areas of interest to pursue for credit. The basic core described above prepares all graduates to function as beginning professionals in providing nursing service for patients, their families, and for communities, as well as in team leadership. Elective courses provide the student with additional content and experience in an area of interest and give him the opportunity to gain the increased proficiency for any type of initial professional position he might assume after graduation. The student may choose specialized clinical, teaching, or administrative experiences; or he may pursue research or a community agency interest such as school nursing, mental health clinical nursing, ambulatory care, emergency room care, or one of many other special experiences available to meet his particular learning needs.

The student is seen as an active participant in making decisions about his learning needs and interests. Teaching techniques take into consideration the spontaneity, potentiality, and individuality of the student. These techniques, when used in a cooperative environment, promote the student's fullest development.



Resources for Study

Instructional Facilities

The facilities for instruction include the resources available in the undergraduate, professional, and graduate schools and colleges of Duke University and the clinical facilities of Duke Hospital, the North Carolina Cerebral Palsy Hospital, the Veteran's Administration Hospital, and the Durham Health Department and the John Umstead Hospital.

In a wing of Hanes House are located the administrative offices of the School of Nursing, a large classroom seating 100 persons and equipped with audio-visual aids; a small classroom seating 50 persons and equipped with a screen and movie projector, a nursing laboratory with equipment for nursing practice for students, and conference rooms.

Duke Hospital

Duke Hospital, an integral part of the Medical Center, is a 728-bed, 30-bassinet general hospital which performs the concurrent functions of patient care and professional education. It admits over 20,000 patients a year, and maintains comprehensive diagnostic and treatment facilities for their care.

Different levels of patient care are provided by a minimal care unit and intensive care facilities in addition to conventional nursing units.

Private, semi-private, and ward accommodations are available. Approximate daily patient census by service is as follows: surgery (including urology, otolaryngology, ophthalmology, and orthopaedics), 332; medicine (including dermatology and neurology), 231; pediatrics, 78; psychiatry, 52; and obstetrics-gynecology, 45. Surgical facilities include eighteen operating rooms and a recovery room; over 15,000 surgical procedures are performed annually. Two obstetrical delivery rooms are maintained.

Outpatient services include a public clinic which totals some 122,000 visits a year, a private diagnostic clinic of comparable size, and an active emergency service. All of the hospital components are located within a single building. Close working relationships between Duke Hospital and outside health agencies contribute to continued care.

Duke Hospital is approved for internship and residency training by the Council on Medical Education and Hospitals of the American Medical Association, and conducts an active educational program involving some 280 house staff members. The hospital is fully accredited by the Joint Commission on Accreditation of Hospitals.

Libraries

Nursing Library

A reference library of 7,000 books and periodicals is located in Hanes House for the use of students majoring in nursing. There are available approximately one hundred current periodicals on nursing and allied fields, as well as *The Cumulative Index to Nursing Literature, Index Medicus, International Nursing Index,* and *Hospital Literature.*

The library is open 98 hours a week with reference assistance available. Students may freely use other libraries on campus, both general and professional.

University Library

The new Perkins library, among the first seventeen university libraries in the country, contains 1,940,146 volumes and 4,000,000 manuscripts. About 80,000 volumes are added annually. Separate departmental and professional school libraries provide notable collections in the several disciplines.

More detailed information may be obtained in a *Student's Guide to the General Library,* available on request to the Librarian of the University.

Medical School Library

The Medical Center Library, located in the Davison Building, attempts to provide all services and collections necessary to further educational,

research and clinical activities in the medical field. Extensive reference and bibliographical service is provided. The collection contains over 80,000 volumes and about 1,600 current periodicals.

The Trent Collection in the history of medicine is an unusually fine one, rich in manuscripts and rare books, and provides the opportunity for study and research as well as casual reading in the field.



Student Life: The Undergraduate Student

Living Accommodations

Housing

Undergraduate students live in residence houses on campus unless they reside with their immediate families. School of Nursing students presently live in Hanes House and Hanes Annex which have double and a few single rooms. Residence House Counselors, who are on the staff of the Dean of Student Affairs, live in the dormitories and are responsible, with the cooperation of the student government, for the administration of the houses.

A $25.00 room deposit is required before a student may reserve a room. Once she matriculates, the deposit is held for the entire period of her academic enrollment. The deposit is refundable under the conditions described in the section Undergraduate Program: Financial Information.

Rooms are normally rented for the academic year; however, rental payments may be made by the semester. All payments must be made in advance to the Bursar. After the day of registration, room rent will not be refunded.

Students are notified in August when they may occupy their rooms in September. Each student must be vacated from her room within 24 hours of her last obligation; i.e., examinations or 24 hours after commencement for graduating seniors.

Storage facilities are available during the summer to students who have preregistered for the fall semester. While reasonable care is exercised, the University does not carry insurance on the personal properties of students and assumes no financial responsibility for damage to or loss of such properties.

Limited maid service is provided in the dormitories, but each student is responsible for the care of her room and furnishings. The University reserves the right for a member of the housekeeping staff to enter and inspect the condition of any student's room. Students are held responsible for damage that occurs in the room and repair costs will be assessed the occupants. Housing regulations are listed in *The Charge*, the Undergraduate Student Handbook in the School of Nursing.

Food Services

The dining facilities available to students in the School of Nursing include the Medical Center and the East and West Campus cafeterias for upperclass students; the West Campus and Graduate Center cafeterias and the East Campus Union for freshmen and sophomore students. A student must pay board during her first four regular school sessions. Junior and senior students will not be required to pay Board fees.

Services Available

Medical Care—Student Health Service

Students enrolled in the regular program of studies are eligible for the services offered under the health program of the School. With the necessary exceptions noted below, this type of care is furnished at a minimum expense to regularly enrolled students. (The cost is included in the general fee each semester).

Exceptions. The health program does not cover chronic or pre-existing conditions, private duty nursing, refraction of eyes, treatment of teeth, elective surgery, braces or any orthopaedic appliance, accidents or illness occurring during vacation or while off the campus. Blood used for transfusions must be paid for or replaced.

Physical Examinations. Physical examinations are provided for all nursing students in the spring of every year. Each student must have a physical examination in the spring prior to beginning her clinical experience and subsequently every spring.

Health Office. The health office in Hanes House, under the direction of

a physician, is maintained for the students in the school. Advice, treatment, and examination are available to students during regularly scheduled hours. Consultations with Duke Medical Center staff specialists are arranged through the health office as necessary; arrangements for drugs, dressings, laboratory tests, and X-rays are made as needed.

Hospitalization. A student requiring hospitalization is admitted to Duke Hospital. Admission is arranged through the health office. Medical and surgical care is under the supervision of a senior physician or surgeon. Hospital care includes staff nursing, drugs, dressings, laboratory tests, and X-rays as needed. Hospital care is limited to thirty days. Non-board paying students are charged board while in hospital or infirmary (juniors, seniors).

If the student is covered by an insurance plan which provides for hospitalization, medical or surgical benefits, the coverage should be applied to the cost of care.

Student Health Insurance. A special commercial policy available only to regularly enrolled Duke students can be secured to furnish complementary protection, if desired. The insurance excludes any coverage for accident or illness cared for under the health program; insurance protection is furnished for off the campus and during vacations.

Student Mental Health Clinic. Staffed by members of the Duke Medical Center's Department of Psychiatry, the Student Mental Health Clinic provides psychiatric consultation without charge to all undergraduate women registered full time in the School of Nursing and The Women's College. While special arrangements are made for extensive or prolonged therapy, this service is not included in the health program.

University Counseling Center

The University maintains a Counseling Center which provides a centralized program of educational, vocational, and personal counseling for students. In addition, the Center administers special group testing programs for University schools and departments and serves as the local testing center for a wide variety of national testing programs. The Center also carries on programs of research in the field of measurement and counseling.

Appointments (placement) Office

Duke University maintains an Appointments (placement) Office which acts as a liaison between the University and potential employers in business, education and government. All services are offered without charge to Duke students and alumni. The staff is available to talk with students about their future professional plans. Students who wish to register with the office are offered an opportunity to assemble a complete dossier of academic records and recommendations to supplement applications for

positions, and to have a permanent file for future reference. Pertinent recommendations are far easier to accumulate during the time a student is enrolled at Duke. Interviews with representatives visiting Duke are scheduled throughout the year through the Appointments Office for those who have registered. Copies of academic records are released only with the permission of the individual.

Student Activities

Religious Life

"Eruditio et Religio," the motto emblazoned on the seal of the University, proclaims belief in the essential union of knowledge and religion in the educational process. The Gothic Chapel stands at the center of the campus, an inspiring symbol of the place of religion in the well-balanced life. The Chapel program encourages the cultivation of the moral and spiritual life of students.

Opportunities are provided through the Chapel and its related activities to translate worship into effective Christian living. Denominational, interdenominational, and interfaith loyalties are emphasized. Protestant, Roman Catholic, and Jewish students are organized in their respective groups, each having a denominational chaplain or adviser. The University Religious Council and the University Christian Movement promote the ecumenical religious life in its many facets.

Additional opportunities for the enrichment of the student's religious life are offered in organ and carillon recitals, in choral concerts, and in other special services. Some students, at their own discretion, participate actively in the program of the downtown churches of their choice.

Student Organizations

Student organizations provide for participation in many broad interest areas such as student government, student union, music, drama, service, publications, honorary and professional groups, and social activities.

Student Government. Every undergraduate student at Duke University is a member of the Associated Students of Duke University (ASDU), the unitary student government organization formed in 1967. While the president, secretary, and treasurer are elected from the entire student membership, each of the undergraduate schools, including the School of Nursing, elects a vice president to the executive body of ASDU. The Legislature is composed of elected legislators from each college on the basis of population—the School of Nursing having four. ASDU concerns itself with issues which are of paramount concern to the entire University such as academic reform, student rights, and student services.

The Student Government Association of the Duke University School of

Nursing is composed of all students in the undergraduate baccalaureate program, and is coordinated by elected students serving on the Executive Council. Each student has a voice in the consideration of social and academic matters and, through membership and holding offices, has the opportunity to serve her fellow students and the University. Because of the high regard for individual opinion and the democratic nature of decision-making, the student government fosters a sense of individuality, increases skills in group work, and promotes responsibility in developing and carrying out the policies of the School of Nursing and the University.

Student Union. The University Student Union through its board of governors and its six committees—Drama, Major Attractions, Speakers, Performing Arts, Publicity, and Visual Arts—provides the University with a broad program of cultural, educational, and social activities. All undergraduates are members of the Union and are encouraged to participate in its varied committee work.

Musical and Drama Groups. There are a variety of musical organizations made up of students throughout the University. They include the Chapel Choir, Women's Glee Club and Chorus, Chancel Singers, Symphony Orchestra, Concert Band, and Marching Band. The drama groups include the Duke Players and the Wesley Players, both of which present a number of plays and readings each year. Music and drama are combined in Hoof 'n Horn, an organization which annually produces a musical comedy which is cast, directed, and acted by students from the entire University.

Publications. The students of Duke University publish a newspaper, a yearbook, and several magazines. Within the School of Nursing, the Publications Committee of the Student Government Association is responsible for *The Charge*, a handbook; *Beaux and Bows*, an orientation book for freshmen; and *Nurses Notes*, a monthly newspaper.

Santa Filomena. Santa Filomena is a senior honorary society founded for the purpose of recognizing achievement and promoting leadership among students in the School of Nursing. New members are selected from the junior class on the basis of scholarship, superior nursing ability, and service to the School of Nursing.

The North Carolina State Student Nurses Association. As members of the Duke University School of Nursing, students are members of the National Student Nurses' Association through membership in the North Carolina State Student Nurses' Association. Such membership facilitates social relationships and an interchange of ideas with students of various programs of nursing education throughout the state and nation. Participation in the program of the district, state, and national association provides students with the opportunity to work with and learn more about their colleagues of the future.

Sororities. Eleven national sororities and one local sorority have chapters on the University campus. Although there are no chapter

houses, the programs of the sororities are carried on within sections of various buildings on East Campus. Undergraduate women from the Woman's College and the School of Nursing have the opportunity to participate in sororities if they elect to do so.

Prizes and Awards

Duke University School of Nursing Alumnae Award

The Duke University School of Nursing Alumnae Award is presented to the student in the graduating class who has demonstrated outstanding leadership, scholarship, and nursing skill.

The Moseley Award

The Moseley Award of $25.00 is given to the student in the senior class who has shown the most skill in the art of nursing throughout her program in the School of Nursing.

Mary M. Roberts Writing Awards

The Mary M. Roberts Writing Awards is a national writing competition for professional nurses and senior nursing students. Winners attend the Bread Loaf Writers' Conference in August at Middlebury College, Middlebury, Vermont. Details regarding rules and application procedure can be obtained through the office of the Dean.

Undergraduate Admission

New students are admitted for the academic year at the opening of school in the fall.

Candidates may qualify for admission as members of the freshman class or as students with advanced standing. Since the enrollment is limited, the Committee on Admissions selects students who, in its judgment, are best qualified to benefit from the educational advantages which the school offers. Selection is based not only upon academic grades and test scores but also upon recommendations of school officials and other personal criteria. A visit to the campus for a personal interview with a member of the Admissions Committee is suggested, but not required.

Requirements for Admission

Although there are no inflexible subject matter requirements, at least fifteen acceptable units of secondary school credit must be presented. Of these at least twelve must be in college preparatory subjects: English, foreign language, history and social studies, mathematics, and physical or biological sciences. It is strongly suggested that a student present at least one unit in either chemistry or physics.

Students applying for admission are required to take the Scholastic Aptitude Test, the English Composition Test and two other achievement tests of their own choosing given by the College Entrance Examination Board. These tests must be taken no later than the January test date of the College Board in a student's final year in high school.

Prospective students are urged to broaden their reading outside of class during their senior year and to make the acquaintance of books and magazines that do not form a part of the subject matter of their courses. At the same time they should take every opportunity to increase their competence in writing. Those who cannot write simple, clear, grammatical English prose will be progressively at a serious disadvantage in the competition for admission and also in the general work of the freshman year. Careful attention to correctness in English in correspondence and on application blanks cannot be too seriously stressed for candidates for admission.

Evidence of a good health record will be requested after the applicant is considered for acceptance. Final acceptance will be contingent on a complete physical examination during the week of Orientation.

Early Decision Plan

For the well-qualified student who has definitely decided to enter Duke if accepted, the University offers to reserve a place by "early decision" on December 1 of the student's senior year in secondary school. The deadline date for completing applications for December decision is November 1. Prospective early decision candidates should make arrangements to take the Scholastic Aptitude Test and three Achievement tests, including English Composition, on or before the July testing date preceding their senior year.

Regular Admission

Candidates for regular admission must apply no later than February 1, and normally do so during the fall of the senior year. For this group, decisions are mailed no later than April 15.

Application forms and instructions regarding procedure and necessary documents to be included will be sent upon request by the Office of Undergraduate Admissions and Financial Aid, Duke University, Durham, North Carolina 27706. A non-refundable processing fee of $15.00 must accompany the submission of the full application form.

Admission to Advanced Standing

Admission by transfer from other institutions may be arranged for a limited number of students, under certain well-defined regulations. All such candidates must submit official transcripts of all work completed at other colleges, accompanied by a statement of honorable dismissal and scores on the Scholastic Aptitude Test of the College Entrance Examination Board. Transfer credit is usually granted for courses comparable to those offered by Duke University in which the student has earned a grade of C or better. Students may not apply for transfer beyond

admission to the junior class. Further detailed regulations for admission by transfer may be obtained from the Office of Undergraduate Admissions.

Applicants for advanced standing in the School of Nursing should present, as far as possible, subjects corresponding to those required by the School. They may not, during their first semester, register for more than the minimum number of hours required of the class which they enter, except by permission of the Dean of the School of Nursing.

Students in the School of Nursing must be fully matriculated; however, part-time study is possible. A student not completing all requirements for the degree of Bachelor of Science in Nursing within five years will be required to apply for readmission to the curriculum then current.

The School of Nursing will accept a limited number of students who are graduates of diploma or associate degree programs for matriculation in the program of undergraduate study in nursing which leads to the degree of Bachelor of Science in Nursing. Registered nurses who are so matriculated will receive educational advisement from a designated member of the faculty of the School of Nursing. Registered nurses applying for admission to advanced standing are required to submit records of previous performance in nursing, scores on scholastic aptitude tests, and selected achievement tests.

Readmission of Former Students

Former students who have for various reasons withdrawn from college and who wish to continue their collegiate careers should apply to the Duke University Office of Admissions with a detailed account of their activities since withdrawal from college.

Undergraduate Program: Financial Information

Fees and Expenses

The prospective student who seeks the optimum opportunity in higher education will not be a bargain hunter. Certainly, some sound plan for paying the cost of college must be devised, but this plan should be formulated after the thoughtful selection of an institution has been made. No college or university can honestly say that an education at the college level is inexpensive. Most university people and the ever growing college alumni families across our nation, however, will reflect the feeling that the benefits derived from a college education constitute a handsome return on the dollars invested.

Each student going to college should analyze carefully his financial situation. In making such analysis it should be recognized that the primary responsibility for defraying the cost of an education lies with the student and his family. The typical college student can depend upon some contribution from his family's current income, a proportionate share of family savings, and anticipated income from summer employment. The number of years of study contemplated and the number of dependent children in the family should be considered in computing the funds which will be available in a particular year.

Fees paid by the students cover only a part of the cost of their instruction and of the operations of the University. Income from endowment and

contributions from alumni and other sources meet the balance, which constitutes more than half the cost of total college expenses.

Estimated Expenses for an Academic Year

Certain basic expenditures are to be considered in preparing a student's budget, such as tuition, the general fee, room and board. These necessary expenditures together with a reasonable amount allotted for miscellaneous items such as books and supplies are shown below:

Tuition	$1,800.00		
General Fees	200.00	Books and Supplies‡	$120.00
Room Rent (Double)*	360.00	Activities‡	18.00
Board†	550.00	Uniforms§	93.00

Although these amounts are based upon present existing charges, they are subject to change. The prospective student should contact the Office of Admissions for more current information.

The total expense involved in attending the University depends to a large extent upon the tastes and habits of the individual. It is realistic to suggest that the average Duke student, however, can plan a budget of $3,500.00 for the academic year. Travel costs, clothing purchases, and other optional major expenditures would have to be added to this estimate.

Tuition and Fees

Tuition and General Fee. The tuition of $900.00 and the general fee of $100.00 due and payable not later than the date of the beginning of a particular semester after the day of registration. No refund of the tuition or the general fee will be made except for involuntary withdrawal to enter the armed services.

Bills may be sent to parents or guardians provided the Bursar has been requested in writing to do so. Failure to pay bills on or before the due dates will debar the student from class attendance until the account is settled in full.

No records are released and no student is considered by the faculty as a candidate for graduation until she has settled with the Bursar for all indebtedness.

Registration Fees and Deposits. New students, on notification of acceptance, are required to pay a non-refundable first registration fee of

*Hanes House.

†No board charge for juniors and seniors. These students pay for each meal individually. Meal costs may be estimated at $70.00 per month as a minimum.

‡Approximate cost.

§Approximate initial cost to freshmen for uniforms during freshman and sophomore year.


HANES HOUSE
SCHOOL
OF
NURSING

$20.00 and to make a deposit of $50.00. The $50.00 deposit will not be refunded to accepted applicants who fail to matriculate. For those who do matriculate, $25.00 of the deposit serves as a continuing room deposit for successive semesters, and the remaining $25.00 as a continuing registration deposit.

Refunds

The initial $25.00 room deposit is effective for the entire college course of the student whose attendance during regular terms is continuous. The deposit will be refunded to resident students under the following conditions: (a) within thirty (30) days after the student has been graduated, (b) upon student's withdrawal from the University residence halls provided a written notice is received by the Director of Housing Management by August 1 for cancellation of reservation for the fall semester and not later than January 15 for cancellation of reservation for the spring semester, (c) when the reasons requiring withdrawal are beyond the student's control. No refund is made until the occupant has checked out of her room through the Office of Housing Management and has settled all her accounts with the Bursar.

Late Registration Fee

Students who register in either semester at a date later than that prescribed must pay to the Bursar a fee of $10.00.

Readmission Fee

Students who have been readmitted to the University after an absence of one or more terms on notification of readmission, are required to make the $50.00 room rent and registration deposit.

Room reservations are made with the Director of Housing Management. An applicant who has been officially accepted as a resident student is assigned a room according to an established plan.

Fees for Special Students. Part-time special students who register for no more than two courses with a maximum total credit of eight semester hours are charged a registration fee of $5.00 for each course and $65.00 for each semester hour. Registration for 9 or more semester hours or 3 or more courses, requires payment of full fees.

Fees for Auditing. Auditing of one or more courses without charge is allowed students paying full fees, provided that the consent of the instructor is obtained. Students who are enrolled for not less than 3 nor more than eight semester hours may audit other courses by payment of $32.50 for each course audited. Auditors submit no daily work, take no examinations, and receive no credit for courses audited.

Transcript and Fees. A student who wishes to transfer his credits from

Duke University to another institution may request transcripts. A minimum fee of one dollar, payable in advance, is charged for a single copy. A charge of 50¢ will be made for each additional copy on the same order.

Fees for Course Change. Changes in courses for reasons not arising within the University require a payment of $1.00 for each change made.

The Summer Session

University fees for Summer Session 1968 will be charged undergraduates at the rate of $55.00 per semester hour for those admitted with advanced standing. A double room is $62.50 per person for a term of Summer Session and a single room is $85.00 for the same period. The cost of laundry is approximately $1.00 per week. A bill is sent to all preregistered students to permit payment in advance.

Living Expenses

Housing. The rental charge* for a single room is $480.00 for an academic year or $240.00 per semester. The rental charge per person for a double room is $360.00 for an academic year or $180.00 per semester.

Food Services. The charge for board is payable not later than the date of the beginning of each semester, also at the beginning of summer session. Students will not be entitled to a refund on board after the dates of the Fall or Spring mid-semester. (See Calendar.)

Student Aid

Duke University is interested in students with ability and ambition. It is the aim of the University Financial Aid Committee and others affiliated with the Financial Aid Program to provide, insofar as possible, the financial assistance required by students accepted for entrance who are unable to defray the cost of college from their own resources. The assistance is made available in the form of scholarships, grants-in-aid, loans, and part-time employment. It should be noted that admission decisions are made first; then among those to be accepted, all who have applied for financial aid are considered. Therefore, it should be clearly understood that *no preference* is given to applicants for admission who are not aid applicants.

Application Procedure

All requests for applications for scholarships, grants-in-aid, industry scholarships, or remission of tuition should be addressed to the Office of

*Hanes House.

Undergraduate Admissions and Financial Aid, Duke University, Durham, North Carolina 27706.

All candidates for scholarships and grants-in-aid must submit an official Application for Admission to the University and the Application for Scholarship to the Office of Undergraduate Admissions. Scholarship candidates who desire to be considered for maximum value of scholarships on the basis of financial circumstances are required to submit the "Parents' Confidential Statement" of the College Scholarship Service which may be obtained from high school guidance personnel or upon request from the Admissions Office.

Scholarship candidates should initiate their applications during the fall semester of their senior year of study in secondary schools. Instructions concerning the specific requirements and deadline dates will accompany the application materials sent to applicants for scholarships and grants-in-aid.

Angier B. Duke Memorial Scholarships. The Angier B. Memorial Scholarships are intended to recognize your men and women who possess outstanding qualities of intellect and leadership. Recipients should possess superior scholastic ability of a creative nature and minds which can assimilate and utilize the knowledge they acquire. As potential leaders, they should possess unique qualities of character and personality, and a sincere interest in becoming responsible and contributing members of society. The awards will be renewable for four years, contingent upon satisfactory academic progress and citizenship.

The applicant for the Angier B. Duke Memorial Scholarship will be sent a supplementary questionnaire which he must complete and return. The information requested in this form will be employed by the selection committee in choosing finalists for the Angier B. Duke Memorial Scholarship competition. *To be considered for an Angier B. Duke Memorial Scholarship, the candidate's Application for Admission, supporting credentials, and the supplementary Angier B. Duke Questionnaire must be received in the Office of Undergraduate Admissions before January 1.*

Candidates for admission to the freshman class in Trinity College, The Woman's College, the School of Engineering, and the School of Nursing are eligible to compete for approximately 35 Angier B. Duke Memorial Scholarships.

Value: to $3,300.00 annually.

Psychiatric Nursing Undergraduate Training Grant Awards

A limited number of Psychiatric Nursing Undergraduate Training Grant Awards are available to qualified junior and senior students. An award provides for an annual stipend plus tuition fees. Additional information about the Psychiatric Nursing Undergraduate Training Grant Awards may be secured in the Dean's office.

To qualify for an award, the student must have an above average academic record and the potential for admission to graduate study, and must declare intent to pursue a career in the field of mental health.

Army and Navy Nurse Corps Student Program

Students in the Basic Nursing Programs may apply for appointments in the Army Student Nurse Program at the beginning of their junior year, or the Navy Nurse Corps Candidate Program at the beginning of their senior year. The appointments carry generous financial allowance. A student who participates twelve months or less serves on active duty in the respective service for twenty-four months. If two years support has been given, she serves thirty-six months.

Grants-in-Aid

Although sufficient funds are not available to assist all applicants who present requests for aid, a number of grants-in-aid are made each year to able students who need financial assistance in order to meet the cost of attending college. Any candidate for admission, therefore, who considers herself to be in such need is eligible to apply for a grant-in-aid.

Applicants for grants-in-aid will be required to submit a "Parents' Confidential Statement."

Florence K. Wilson Scholarship Fund. This fund is available to nursing students who apply for grants-in-aid.

It was established in 1961 by combining the Nurses' Alumnae Association Scholarship Fund, the students' Florence K. Wilson Scholarship Fund and contributions from the Wilson family and friends. The income of this fund is to be used for scholarships for students enrolled in the School of Nursing.

Remission of Tuition

Certain students attending Duke University are entitled to a remission of the University tuition charge. Students in this group are entitled to a maximum of eight semesters of free tuition at the undergraduate level. Each Summer Session in which work is taken and each semester spent in another institution will be counted as one of the eight allowable semesters. Only those students enrolled in the regular Nursing School program leading to a Bachelor of Science in Nursing degree are entitled to a remission of tuition charge.

Children of ministers who are members of the North Carolina or Western North Carolina Conferences of the Methodist Church are entitled to a remission of the University Tuition charge, as are the children of ministers of all faiths residing in Durham County, North Carolina. This consideration is given only to children of resident members of the two

North Carolina conferences who are giving their full time to religious work.

Tuition Grants

Tuition grants are available to children of certain qualified staff members of Duke University for a maximum of eight semesters of undergraduate study at Duke University.

Loans

Loan funds held in trust by the University, as well as funds supplied by the federal government through the National Defense Education Act of 1958, are available to qualified students. Freshmen as well as upperclassmen are eligible to apply for student loans.

Loans generally mature after borrowers have left the University. Loan interest on long term loans from University funds accrues at the rate of one per cent per annum from the date of each note. After a student leaves the University permanently, the loans bear interest at the rate of three per cent per annum. The balance unpaid after five years bears interest at the rate of six per cent per annum.

In addition to local loan funds, Duke University participates in the student loan program established under the provisions of the National Defense Education Act of 1958. Repayment of loan funds from the National Defense Loan Fund normally begins nine months after the student terminates his attendance at the University, with complete repayment scheduled within a ten-year period. Interest accrues at the rate of three per cent per annum commencing nine months after the borrower ceases to be a full-time student at an institution of higher education. Special benefits to those teaching in public or private nonprofit elementary and secondary schools and in institutions of higher education permit a portion of the loan to be cancelled depending upon the length of teaching service. Complete details regarding the student loan program may be obtained by writing directly to the Student Loan Office.

Students applying for loans are selected on the basis of character, scholastic attainment, personality, and degree of financial need. A student in residence may not, without special permission, own or operate an automobile during the academic year for which the loan is granted. Loan applications must be submitted not later than July 1, preceding the academic year for which assistance is requested.

Undergraduate Registration and Academic Regulations

Registration

Students in residence are required to submit, not later than the date of the spring registration, cards showing their selection of courses for the following year. Evidence of the payment of the continuing pre-registration deposit of $25.00 is required before the card may be submitted. These cards, approved by the designated academic adviser, are filed for permanent record in the Central Records Office. Students who do not select their course for the following year at the time appointed must be readmitted to the college by application to the Committee on Admissions. The same regulations, with the exception of the advance deposit, apply to registration for the spring semester.

Students who register in either semester at a date later than that prescribed must pay to the Bursar a fee of $10.00. They are counted as absent in the work they have missed in the professional courses to which they are admitted, and these absences carry the same penalty as do other absences from the professional courses. Changes in courses for reasons not arising within the University require a payment of $1.00 for each change made. No course may be elected later than one week after the opening of the semester, and no student may be admitted to any class without an official enrollment.

Orientation Program

All Freshmen and transfer students are required to participate in the activities of Orientation Week. The program includes placement tests, orientation lectures, physical examinations, social events, special religious services, registration, and enrollment. New students who miss the whole or a part of the Orientation Program place themselves at a serious disadvantage at the very outset of their college career.

Identification Cards

On Registration Day each student is issued an Identification Card which she should carry at all times. It secures library privileges, student health services, entry into certain athletic events and admission to other functions to which student status entitles her. A student is expected to present her card at the request of any authorized official of the University.

ID cards are not transferable and the loss of an ID card should be reported immediately to the Dean of Student Affairs. The cost of a new ID card is $5.00.

Academic Regulations

Four academic years (eight semesters) in residence is the normal amount of time a student may take to earn the degree of Bachelor of Science in Nursing. Five years is the maximum to be permitted, unless the student has previously been admitted as a special student.

Academic progress is measured in terms of semester-courses (and half-courses and double-courses) satisfactorily completed rather than in terms of semester hours. (A semester-course is roughly the equivalent of three or four semester hours, under the semester hour system.) The normal academic load is four courses per semester. A student must have the permission of his academic adviser to take fewer than four courses per semester, or to take more than five courses.

Grades and Credits

Incomplete Work. If because of illness or other emergency a student's work in a course is incomplete, he may receive an *I* for the course instead of a final grade. Incomplete courses must be completed before the close of the succeeding semester; otherwise the *I* is converted to an *F* and the course must be repeated in class if the student is to receive credit for it. In case a student whose work is incomplete is also absent from a final examination, she receives an *X* for the course.

Withdrawal. The letter *W* is used to indicate official withdrawal from

a course. If a student drops a course without permission from his or her academic adviser, the grade for that course is recorded as *F*. If he drops before six-weeks grades come out and with permission from his academic adviser, the letter *W* is used to indicate withdrawal. If a student withdraws with permission after six-weeks grades are out and is failing the course, the grade for that course is recorded as *F*, unless, in the judgment of the Dean, circumstances do not justify this penalty.

Reports. Reports on proficiency in academic work are sent to parents or guardians after the examinations at the end of each semester. In addition, six-weeks advisory grade reports on freshmen are mailed each semester.

Failing Grades. Failing grades appear on the transcript, but graduation depends on courses passed, and is not governed by those failed.

Transfer Credits. Credit for work completed from regionally accredited, degree-granting institutions is evaluated for transfer value in relation to the curriculum requirements of the School of Nursing. Courses in which grades of less than *C* have been earned are not acceptable for credit. Credit for liberal arts courses is determined by the department concerned. No credit is given for work completed by correspondence. Any extension work must be approved by the Dean.

Residence Requirements. The minimum time that any student may spend in residence before receiving a degree of Bachelor of Science in Nursing is two years; these must include the student's last two years at Duke, unless the student has spent a certain period of time in study at another institution in this country or abroad, having received prior approval by the Dean of the School of Nursing.

Requirements for Continuation and Graduation

A student who fails three or more courses in the first semester of the freshman year or who fails two or more courses in any subsequent semester must leave the University for at least two semesters. The double summer session may be counted as a semester. The student's return must be approved by the Dean of the School. If the student thereafter fails two or more courses in a semester he will be permanently dismissed from the University. In addition, a student may be dismissed temporarily or permanently by the Dean of the School for failing to make satisfactory progress toward graduation. Any student excluded from the University under the provisions of this proposal may at his request have his case reviewed by the Undergraduate Studies Committee.

A student must have passed a minimum of 14 semester-courses before beginning the professional curriculum (upper division), including all required lower division courses. Ten of these courses required for advancement into the professional curriculum must have been passed with a *C*— or better grade.

For graduation a student must have passed at least 32 semester-courses

(or a combination of semester-courses, half-courses, and double-courses that would be equivalent to 32 semester-courses), including an approved curriculum. Twenty-two of the 32 courses required for graduation must be passed with a *C*— or better; and an over-all *C* average or higher must be attained in the upper division professional curriculum.

Class Attendance Regulations

The attendance regulations specifically place the responsibility for class attendance upon the individual student. A student is expected to attend his classes regularly and punctually. It should be recognized that one of the most vital aspects of a residential college experience is attendance in the classroom, and that the value of this academic experience cannot be fully measured by testing procedures alone. The members of the student body are considered sufficiently mature to appreciate the necessity of regular attendance, to accept this personal responsibility, and to demonstrate the kind of self-discipline essential for such performance, and conversely, to recognize and accept the consequences of failure to attend. Instructors are privileged to refer to the Dean for appropriate action any student who in their opinion is causing his work or that of the class to suffer because of absences or latenesses.

Absences from classes due to illness will be excused when certified by a proper medical official. Absences from classes due to authorized representation of the University may be excused. Officials in charge of groups representing the University are required to submit names of those persons to be excused to the appropriate dean's office forty-eight hours in advance of the hour when their absences are to commence.

Eligibility for Academic Honors

Dean's List. In recognition of academic advisement, students who earn the equivalent of a 3.00 q.p.r. or higher on a semester's work of not less than the minimum academic load are placed on the Dean's List.

Class Scholars. A student in each class of the School of Nursing who achieves the highest academic standing on at least a normal course load for each academic year shall be designated a Class Scholar.

Class Honors. To be eligible for Class Honors a student must earn, during the year, credit for at least the minimum academic load permitted by the college in which she is registered. All courses on which a student receives a grade are counted in the determination of Class Honors. Students in the freshman, sophomore, and junior classes who earn the equivalent of a 3.50 or higher q.p.r. for the academic year are eligible for Class Honors.

Transfer to or from Schools within Duke University

A student in good standing in the School of Nursing may transfer to The Woman's College if it appears probable that she can complete

satisfactorily the requirements for graduation within the usual four-year period. She may already have incurred certain deficiencies, however, such as the lack of a foreign language course or other liberal arts courses which will make transferring difficult. Only those students with a satisfactory academic record can usually be considered for transfer.

A written request for transfer to The Woman's College should be submitted to the Dean of Undergraduate Instruction in The Woman's College by March 1 along with a written recommendation from the Dean of the school in which the student is enrolled.

A Woman's College student considering transfer to the School of Nursing or to the School of Engineering should consult with the appropriate officials of the school as well as with her dean of instruction in The Woman's College.



Undergraduate Nonacademic Regulations

Formulation and Modification of Regulations

The regulations of the Student Government are administered and revised by the student Judicial Board in cooperation with the administration of the School. Any student, or group of students, may recommend a change in the regulations by petitioning the Judicial Board. Regulations may be modified at any time, and are brought up to date yearly in *The Charge*, the undergraduate student handbook.

All students in the School of Nursing live under the Honor System, a system developed by the students themselves to encourage the growth of honesty, self-discipline, and responsibility in all facets of their lives—academic, professional, and social. It operates on the principle that the individual is involved with the other members of his community to the extent that he is concerned with the integrity of his fellow students as well as with his personal honesty. Therefore, the student is on his honor to help other students follow the Honor System and to encourage violators to report themselves to appropriate adjudication body, either Honor Council or Judicial Board. Action taken by Honor Council or Judicial Board is aimed primarily at correction rather than punishment. The two boards which administer the Honor System are Honor Council which hears primarily cases of lying, cheating, stealing, and reported negligence in reporting offenses against the Honor System and Judicial Board which functions in a legislative capacity in relation to proposed rule revisions

and is responsible for considering minor offenses and infractions of major regulations of student governmnet (primarily social regulations).

Upon accepting admission to the School of Nursing, the student indicates her willingness to accept the Honor System, to respect the regulations of the School, and to acknowledge the right of the School to require her withdrawal if, in the judgment of the constituted authorities, she fails to meet its standards.

Violations of academic and community regulations are considered serious offenses and are subject to judicial action which may involve penalities of suspension or expulsion which require involuntary withdrawal from the University with a record of the action noted on the official academic record of the student.

Judicial procedures provide that:

1. The accused has the right to be faced by the accuser or by written report of the accuser.
2. The accused is to be given written notice of the charges against him at least 72 hours before the hearing. If he desires additional time in which to prepare his offense, he may ask for and be granted a delay of the hearing. The accused may waive the formal notice and the 72 hour waiting period.
3. The accused has the right to introduce documents and offer testimony in his own behalf, produce and question material witnesses, and produce as many as two character witnesses (who are members of the School of Nursing student body).
4. The accused should have a reasonably adequate summary and access to all of the material testimony and other evidence against him so that he may prepare his defense.
5. The accused has the right to be assisted in his defense, both prior to and during hearing, by an advisor of his choice from the School of Nursing student body, exclusive of any member of the board by which his case is to be heard. Advisors will not have right to testify.
6. If the accused pleads not guilty, he has the right to request an open hearing which may be attended by any member of the N.S.G.A.
7. To avoid self-incrimination, the accused has the right to remain silent in answer to question. Any information volunteered by the accused can and will be used as evidence either against or in favor of him.
8. The accused is reminded that she will be on her honor to give only truthful testimony and that failure to do so will constitute perjury.
9. The decision of the Board will be read to the accused and the accuser(s) at a time or times designated by the Chairman. The primary parties are to be informed of the grounds for the determina-

tion of any finding or penalty imposed. If the rationale of the Board in relation to the degree of the penalty is related to the accused is past involvement with the Board, this information is to be regarded as confidential and not to be divulged to the accuser(s).

10. The accused may appeal any decision of the Honor Council or the Judicial Board to the Dean of the School of Nursing.
11. All matters regarding a student's honor or the proceedings of a case shall be kept confidential by members of the Board. Students questioned in connection with a case are also encouraged to keep the proceedings confidential.

A University Appeals Board is charged with hearing appeals beyond the level undergraduate Colleges.

University Regulations

Possession and Use of Alcoholic Beverages

In the State of North Carolina, it is unlawful for persons under twenty-one years of age to purchase, possess, or use certain beverages containing alcohol. The University neither condones the illegal purchase or use of such beverages by its students nor countenances the serving of them to students under age. Moreover, it prohibits the consumption by any person or persons of these beverages on the University grounds or in its non-residential buildings. Within these limits, the University is prepared to leave to the individuals directly concerned the decision whether or not lawfully to possess or drink the beverages in question in the residential limit. The living group remains responsible for the general tone of each area of residence, however, and may by majority vote adopt house regulations more limiting than the laws of the State.

The attention of all students is called to sections of the General Statutes of North Carolina (see Appendix A).

Possession and Use of Certain Drugs

Duke University prohibits its members to possess, use, or distribute illegal drugs, including opiates, barbiturates, amphetamines, marijuana, and hallucinogens, except for legally authorized medical purposes and scientific research. Both Federal and North Carolina laws forbid unauthorized possession and distribution of drugs of the classes specified. In addition, the presence and use of many of these drugs within the University community are contrary to the intellectual and educational purposes for which the University exists.

The University recognizes that ignorance or innocence concerning such drugs threatens the safety of members of its community. It therefore seeks to provide as much information as it can consequences of harmful drugs. The University recognizes also that the illicit use of drugs may reflect emotional problems and is prepared to assist its members involved in their use through medical and psychiatric counseling. Nevertheless the University considers a violation of the drug prohibition a serious matter and reserves the right to take action appropriate to the circumstances of each case.

Action taken by the University in all cases of drug violation will be guided by a concern both for the emotional and physical welfare of the person involved and for the maintenance of a suitable educational environment for all members of the University.

Rules. Alleged violations of the policy stated in paragraph 1 above will be adjudicated by the appropriate deans, or in the case of non-students, by comparable authorities, and their appointed delegates. It is expected that deans' staffs will exercise professional judgment in referring indicated cases to University health and counseling services, in keeping with paragraphs 2 and 3 of the policy stated above.

The two grounds which may constitute occasion for the assessment of penalties are:

a. Conviction of a member of the University on a drug charge by a court of law.

b. A finding by the appropriate University tribunal in conformity with the principle of due process, of sufficient evidence that a member of the University has violated the drug policy.

The maximum penalty to be imposed within the University upon a student for the possession or use of marijuana shall be suspension; for the possession or use of other illegal drugs, or the distribution of any illegal drug, the maximum penalty of the University is expulsion. Other members of the University shall be liable to appropriate comparable penalties.

See Appendixes B and C for Federal and State statutes pertaining to the possession and use of certain drugs.

Nondiscrimination and Off-Campus Facilities

As University policy prohibits discrimination in any way on the basis of race, creed, or national origin, it is required that University personnel and campus organizations govern themselves accordingly. This covers the official activities sponsored, financed, and controlled by these groups whether the activities are held on or off campus. If they are held off campus, the use of facilities where discrimination is practiced is pro-

hibited. Individual students, faculty members, or private groups are free, of course, to conduct their personal affairs as they see fit.

Pickets and Protests

Disruptive picketing, protesting, or demonstrating on Duke University property or at any place in use for an authorized University purpose is prohibited.

Dormitory Regulations

Residential Hours

Curfew for Sophomores, Juniors, and Seniors: Self regulated.

Second-Semester Freshmen: 2 a.m.

Curfew for First-Semester Freshmen:

First Semester through last day of classes:	Sunday-Thursday, midnight Friday and Saturday, 2:00 a.m.

Men visitors may be entertained in the public parlors on Sunday through Thursday until 12 midnight and on Friday and Saturday until 2:00 a.m. Men are not permitted in the private quarters of the residence.

Signing-In and Signing-Out

The In-and-Out Card must be filled out completely and legibly anytime the student leaves the Durham-Chapel Hill area to return before curfew when leaving campus to return after 8:00 p.m., or when on campus but not planning to return until after 12:00 a.m.

Overnight Leave from Campus

First and second year students are bound by the permissions granted them on their Parental Overnight Permission Form, a form sent to parents prior to the beginning of the student's first semester in school. If a student wishes to take an overnight which is not covered on this form, she must have an individual letter of permission from her parents. Sophomore, Junior and Senior students are responsible for signing out for overnight at their own discretion.

Visiting Men's Residences

A woman student may go into a men's dormitory on West Campus only when visiting hours have been approved by the appropriate dean and the hours have been posted on the NSGA bulletin board.

Marriages

Any student who wishes to marry and remain enrolled in the School of Nursing must, prior to her marriage, have a letter of acknowledgment from her parents or guardian and a conference with the Dean of the School of Nursing.

Motor Vehicles

Freshmen are not advised to own or operate motor vehicles at the University. Members of the upper classes may operate motor vehicles, however, when in accordance with University regulations.

Each student possessing or maintaining a motor vehicle at Duke University shall register it annually at the beginning of the fall semester. If a student acquires a motor vehicle after academic registration, he must register it within five calendar days after operation on the campuses begins. Resident students are required to pay an annual parking fee of $30.00 for each motor vehicle and $10.00 for each two-wheeled motor vehicle.

When registering a motor vehicle, the following documents must be presented: (a) State vehicle registration certificate; (b) valid driver's license; (c) satisfactory evidence of automobile liability insurance coverage with limits of at least $10,000.00 per person and $20,000.00 per accident for personal injuries, and $5,000.00 for property damage, as required by North Carolina Motor Vehicle Law.

Parking, traffic, and safety regulations will be issued to each student registering a vehicle.

Undergraduate Courses of Instruction

The following courses, available to students who entered the School of Nursing prior to September, 1968, will be discontinued after 1970 and 1971:

N 120. *Nursing of Children.* 6 s.h.
N 130. *Maternity Nursing.* 6 s.h.
N 141. *Medical-Surgical Nursing Theory.* 5 s.h.
N 142. *Medical-Surgical Nursing Practicum.* 4 s.h.

These courses are designed to assist the student in acquiring knowledge and developing skills basic to identifying and meeting the nursing needs of adult patients with major health problems that require medical-surgical intervention. Experiences are planned to increase the student's understanding of patients' needs for continuity of nursing care and to enhance his ability to meet these needs as he cares for patients in a variety of settings. These courses must be taken concurrently, and both must be completed satisfactorily in order to receive credit for either course.

N 155. *Community Health and Social Forces.* Must be taken concurrently with N141 and N142. 3 s.h.
N 160. *Social Foundation of Nursing.* 3 s.h.
N 170. *Psychiatric Nursing.* 6 s.h.
N 171. *Psychiatric Nursing Group Work.* 1 s.h.
N 180. *Public Health Science.* Prerequisite: N155. 3 s.h.

N 181. *Public Health Nursing.* Prerequisite: N155. 6 s.h.
N 191. *Team Leadership and Intensive Nursing Care.* 6 s.h.

The following courses are offered to sophomore nursing students matriculating under the new curriculum instituted in September, 1968:

N 96, 97. *Human Ecology I and II.* 2 courses.

Other nursing courses of the new curriculum are broadly described in this *Bulletin* in the section "Undergraduate Course of Study and Requirements for the Degree—Program of Study."



The Master's Program in Nursing

Purpose

The School of Nursing, through its division of graduate studies, offers a program in nursing leading to the Master of Science in Nursing (MSN) degree.

The general purpose of the program is to enable and encourage students to explore, develop, and test theories of nursing practice based on scientific processes, to the end that graduates will continue to seek and extend knowledge about nursing. Opportunities are provided for each student to progress toward his goals in a selected nursing specialty, such as gerontological nursing, community mental health, or geropsychiatric nursing. Concentration upon a limited area helps to deepen understanding and afford experience which will serve as a model for continuing learning.

Preparation to function as a nurse specialist or teacher is provided through elective courses, theoretical exploration, and experiences appropriate to the needs and interests of the individual student. The program incorporates and encourages independent study, innovative approaches, and evaluative methods.

Admission Requirements

1. Completion of a National League for Nursing (NLN) accredited baccalaureate degree program in nursing. (Provisional admission may be granted to applicants not fully meeting this requirement.)
2. A record of undergraduate study that meets general standards for admission to graduate study at Duke University.
3. Registration for the practice of nursing in one of the fifty states.
4. Three recommendations from persons who are acquainted with the applicant's professional ability and capacity for graduate study.

In addition, the individual is encouraged to submit scores from the Graduate Record Examination. A personal interview is also desirable. The applicant should be in good health; a physical examination is made during the registration period.

Procedure

The application, official transcripts of all undergraduate and graduate work, three letters of reference, and Graduate Record Examination scores, if available, should be mailed to the Director of Graduate Studies, School of Nursing, Duke University, Durham, North Carolina 27706. Those applying for the fall semester should submit their applications no later than June 1. For admission to the first term of summer school, applications should be received before May 12; for the second term, before June 18. It is the student's responsibility to make certain that his application is complete and in order before the dates specified above.

When the application is approved, the student will receive a letter of admission. The process of admission is not complete until a statement of acceptance has been returned by the applicant. Applicants who are admitted for graduate work in the School of Nursing will be offered either full admission or provisional admission. Provisional admission to one semester or a minimum of 12 hours of course work is offered to students who do not fully comply with the admission requirements listed above but appear to warrant admission. Graduate credit earned under provisional admission status may be applied toward an advanced degree at Duke University if and when, upon review, the student is granted full admission.

Curriculum

The emphasis in the program is the exploration of the theoretical foundation for nursing practice based on scientific processes. Freedom

to select courses permits concentration of study appropriate to the interests, abilities, and goals of each student.

The core content provides the individual with an opportunity to become familiar with scientific methods relating to nursing practice, to design nursing research projects, and to begin to develop theory of nursing practice in a selected area.

Throughout the year, focus will be on clinical practice; therefore, the student will use the laboratories located in the medical complex and in the community to explore and test theories.

The program of study covers four semesters. Students are admitted in the Fall of each year.

Courses required of all students are:

Nursing Courses	*Units*
Development of Nursing Theory	6
Methods of Research in Nursing	3
Nursing Elective	3
Independent Study in Nursing	5
Thesis Research	4
Cognates	
Human Behavior and Psychophysiology	3
Elementary Statistics	3
Advanced Statistics	3
Electives, Non-Nursing	12
42 units minimum requirement	42

Suggested Course Sequence

First Year

First Semester	*Units*	*Second Semester*	*Units*
Development of Nursing Theory	3	Development of Nursing Theory	3
Human Behavior & Psychophysiology	3	Methods of Research	3
Elementary Statistics	3	Electives	6
Elective	3		

Second Year

First Semester		*Second Semester*	
Nursing Elective	3	Thesis Research	4
Advanced Statistics	3	Independent Study in Nursing	5
Elective	3		

Registration

All students who enter course work for credit and all students who have completed minimum requirements for an advanced degree but continue to use the facilities of the University in their research must complete the registration procedures.

After the applicant has received notification of admission and has submitted a statement of acceptance of admission, she is eligible for registration. All students are expected to register at the time stated. Those registering later are subject to a late registration fee of five dollars.

Change of Registration. During the academic year within a period of fourteen days from the specified day of registration, students may change their schedules with the approval of the Director of the Graduate Program.

Course Requirements and Credits

Although ideally graduate study is principally individual reading, research, and laboratory experimentation under guidance, academic progress in the United States is generally measured and recorded in terms of course hours and credits. Peculiar to graduate study is the term residence, also generally measured in hours, to designate individual study apart from courses, such as writing a thesis and preparing for general examinations. Since September, 1959, in this University, graduate credit for courses and seminars, research, and residence, and corresponding tuition and fees have been stated in terms of units. According to conventional measurement one unit is equivalent to one semester hour. Thus a course previously described as carrying a credit of 3 s.h. now carries a credit of 3 units.

Normally, graduate students who do not carry teaching or assisting duties carry a full load of graduate work until the requirements of the degree are met.

Courses Primarily for Undergraduates. Students granted provisional admission may on occasion be required to take, as part of their program, undergraduate courses as prerequisites to continued graduate study. Undergraduate courses thus taken and others elected by the student will carry no graduate credit.

In exceptional cases, 100-level courses outside the major department may be taken for graduate credit to a maximum of two one-semester courses or one year course not exceeding a total of 8 units, when approved by the Director of the Graduate Program in the major department and in the department in which the course is listed.

Residence Requirements. Candidates for the Master's degree must

spend, as a minimum, one academic year at Duke University. Often more time will prove necessary depending upon the nature of the student's program of studies.

Transfer of Graduate Credits. Under certain circumstances a maximum credit of 6 units may be allowed for graduate courses completed elsewhere. The acceptance of credit up to this amount, however, will not reduce the minimum period of full-time registered residence at Duke University.

Grading

Grades in the Graduate Program are as follows: *E*, *G*, *S*, *F*, and *I*. *E* (exceptional) is the highest mark. *G* (good) and *S* (satisfactory) are the remaining passing marks. *F* (failing) is below passing, and *I* (incomplete) indicates that some portion of the student's work is lacking, for a satisfactory reason, at the time the grades are reported. The instructor who gives an *I* for a course specifies the date by which the student must have made up the deficiency. In no case may an extension be granted beyond one calendar year from the date the course ended. If the course is not completed, a statement of *No Credit* is made upon the student's record.

Time Limits for Completion of Master's Degrees

The candidate for the Master's degree who is in residence for consecutive academic years should complete all requirements for the degree within two calendar years from the date of her first registration in the Graduate Program. Any candidate *must* complete all requirements within six calendar years of her first registration. Credits earned over a longer period of time cannot be credited toward a degree.

Withdrawal and Interruption of Program

From a course. After 14 days from the date of registration students may drop courses only with the approval of the Director of the Graduate Program, the instructor of the course to be dropped, and the Dean of the School of Nursing. If the course is dropped without the necessary approval, the permanent record will list the course as *Dropped Unofficially, F*. If a course is dropped 30 days or more after the beginning of the class for the semester involved, the status of the student at the time of withdrawal from the course will be determined and indicated by the designation *Withdrew Passing* (W.P.) or *Withdrew Failing* (W.F.)

From the School. The University reserves the right, and matriculation by the student is a concession of this right, to ask the withdrawal of any student whose conduct at any time is not satisfactory to the University. If a student wishes for any reason to withdraw from the School she

should notify both the Director of the Graduate Program and the Dean of the School prior to the date of her expected withdrawal.

Students who find it necessary to interrupt their program of study for a period longer than a summer vacation should, before departure, provide in writing a statement of the reason for interruption, mailing address, and expected date of return.

Tuition and Fees

Tuition and General Fees

The following tables show the general fees and charges collected from all students. All fees for each semester are due and payable, unless otherwise specified, at the time of registration for that semester. No student is admitted to classes until arrangements have been made with the Bursar of the University for the settlement of fees.

Tuition per semester	$900.00
General fee per semester	100.00
Summer Session (per unit)	55.00

Tuition and fees for a full semester program of 16 units amount to $1,000.00. For a part program in the regular semesters, tuition and fees are computed at the rate of $65.00 per unit plus $5.00 fee for each course. Tuition and fees for course work in the Summer Session are computed at the rate of $55.00 per unit. Federal traineeships are available for a selected number of qualified applicants.

Special Fees for Teachers and Others

The University recognizes a special obligation to encourage the following types of students in their professional and personal advancement: (1) members of the faculties of the neighboring public schools and colleges, currently engaged in full-time teaching while taking courses in the Graduate School, (2) ministers of neighboring churches, (3) wives of Duke faculty members, (4) certain full-time employees of Duke University with two or more years service. The reduced fees do not apply to teachers and ministers while on leave of absence, nor to holders of fellowships, scholarships, or graduate and research assistantships, nor to part-time instructors.

Persons eligible for the reduced fee must meet the admission standards required of all graduate students and must be admitted to the Graduate program. They may enroll for one or two courses per semester (in no case totaling more than 7 units) upon payment of a registration fee of

$5.00 for each course and tuition of $32.50 per unit of credit or an audit fee of $32.50 per course. The *in absentia* fee will not be charged at this rate.

Living Accommodations

*Housing**

The graduate student in the School of Nursing may apply for one of the following types of accommodations:

The Graduate Center Women's section. The Graduate Center houses 197 graduate men, 56 graduate and allied health women students, and 117 undergraduate women in sections established within this residence hall. Men and women share the commons facilities on the main floor and the dining facilities on the ground floor. The rental rate per graduate student is $325.00 for the academic year.

Hanes Annex: The first floor of this residence hall is reserved for graduate women and allied health students. The commons areas are shared with seniors in the School of Nursing who occupy the entire second floor. The rental rate is $355.00 for the academic year for each occupant.

Graduate students in the School of Nursing should write directly to the Director of Housing Management for detailed information concerning graduate housing, application procedures, rental rates, and other pertinent information.

Rooms and space in the apartments are rented for a period of not less than one semester unless special arrangements are made through the Office of Housing Management after official acceptance for admission to the University. Students may arrange for apartments or rooms in private homes in the city. The Office of Housing Management of the University maintains a file of rooms and apartments listed with it for rental. Students may use this file as an aid to locating suitable living accommodations.

Food Services

Food service on both the Woman's College Campus and the West Campus is cafeteria style. The dining facilities on the West Campus include two cafeterias with multiple-choice menus, a grill, and, in addition, the Oak Room where full meals and a la carte items are served. The Men's Graduate Center has a cafeteria open at meal hours, and a coffee lounge which is open until 11:00 p.m. The prices are the same as in the West Campus Union. Because of the large number of those served in the dining halls, it is not possible to arrange special diets for individual students.

*Information pertaining to housing is subject to change prior to September, 1969.

Services Available

Medical Care

The complete medical facilities of the Duke University Medical Center are available to all members of the University community. To secure the benefits of the Student Health program, a graduate student in residence during the term or semester in which the illness occurs must be registered for at least 9 units per semester, and in the Summer Session term for at least 3 units. Students are not covered during vacations and their dependents and members of their family are not covered at any time. Care is provided at the Health Office in Hanes House.

The service provided includes hospitalization in Duke Hospital, when recommended by the Hospital staff, to a limit of thirty days; medical and surgical care under the supervision of a senior physician or surgeon; drugs, X-ray work, and ward nursing. Students pay for board while in the hospital. Excluded from the service are refraction of eyes, treatment of teeth and of all chronic and pre-existing conditions, and elective surgery.

Graduate students are urged to carry adequate health insurance to supplement Student Health Program services. If students have insurance providing hospitalization, surgical, or medical benefits, the benefit shall be applied to the cost of their medical care.

Recreational Facilities

Graduate students new to Duke University may be reminded that they are welcome to use such recreation facilities as swimming pools, tennis courts, golf course, and to affiliate with choral, drama, and religious groups.

Graduate Courses of Instruction

N 251. *Human Behavior and Psychophysiology.* 3 units. *Reckless*
N 261. *Development of Nursing Theory.* 3 units. *Stone and Staff*
N 262. *Development of Nursing Theory.* 3 units. *Stone and Staff*
N 265. *Methods of Research in Nursing.* 3 units.
N 333. *Curriculum Planning in Professional Nursing Schools.* 3 units. *Crossland*
N 335. *Gerontological Nursing.* 3 units. *Stone*
N 337. *Psychiatric Nursing.* 3 units. *Stone and Staff*
N 360. *Thesis Research.* 4 units. *Staff*
N 365. *Independent Study in Nursing.* 5 units. *Staff*

Graduate School of
Business Administration



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General Information

The University

The story of Duke University began nearly a century and a quarter ago with the founding of the Union Institute in Randolph County. "Dedicated to the erasing of ignorance and error and to the education of responsible citizens," the Institute grew slowly for two decades. In 1859 it was formally organized as Trinity College, which laid the solid foundations for the future. When the college moved to the growing city of Durham in 1892, it found increased support from the church and from individuals who were dedicated to the aims of liberal education. During the next three decades, Trinity College drew to its faculty men of imagination, courage, and intellectual achievement who, in an atmosphere of academic freedom, created a notable liberal arts college.

The transition from college to university dates from James B. Duke's Indenture of Trust in 1924, through which Duke University came into being. Trinity College was joined by three other undergraduate colleges, The Woman's College in 1925, The School of Engineering in 1939, and The School of Nursing in 1953. Through the years, graduate and professional schools in Arts and Sciences, Divinity, Forestry, Law, Business Administration, and Medicine were established. In hardly more than a generation, Duke University has attained a position of educational leadership and importance, both regionally and nationally, and has nearly 43,000 active alumni from all fifty states and many foreign countries.

Setting

Duke University is in Durham, North Carolina, which is centrally located in the state, roughly midway between the majestic scenery of the Blue Ridge and Great Smoky Mountains and the historic Atlantic Coast. A city of nearly 100,000, it is one of the growing communities of the Research Triangle of the Piedmont section of North Carolina. Drawing on the resources of several major universities in Durham, Raleigh, and Chapel Hill, expansion in industry, research, and education is encouraged and facilitated by the personnel of the Research Triangle Foundation.

The Graduate School of Business Administration

The Graduate School of Business Administration after several years in the planning stage was officially created in March, 1969, by action of the Board of Trustees of Duke University. The School in conjunction with the Graduate School of Duke University is authorized to award the Master of Business Administration degree beginning in September, 1970, and the Doctor of Philosophy degree beginning in September, 1972.

The School shares the Social Science Building with the Department of Economics. This building is conveniently located near the center of the campus within easy walking distance of the University Union and the William L. Perkins Library.

The long range plans for the School state that it will be of modest size, in keeping with the tradition of the University. The entering M.B.A. class is not expected to exceed 100 students during the 1970's. The maximum number of entering Ph.D. candidates is not expected to exceed 25 in any one year. The faculty is expected to grow to approximately 25 by 1975.

The Master of Business Administration Program

The general goal of the graduate programs in business administration is to provide a rigorous and thorough education for students who aspire to improve the economic organization and operation of our society.

The Master of Business Administration Program will prepare men and women to understand the basic structure of competitive and cooperative processes, both within and between organizations, and to use the intellectual-professional tools of management. The program serves the student by increasing his capacity for independent thought, creative design of action, constructive compromise, and responsible leadership.

The objectives for the program are:

1. To develop the student who is capable of rigorous analysis of economic and administrative problems and who can develop optimal solutions which serve to coordinate the over-all activity of the organization. This involves a thorough preparation in modern tools of analysis and a rich background in the theoretical foundations of business administration.

2. To develop the student who not only perceives the parts of the organization as subsystems, but also regards the individual organization as a subsystem of a larger economic and social complex.

3. To assist the student to become aware that his graduate studies are but one major phase in the life-long education of a professional administrator. Preparation in the basic disciplines and their application in the solution of specific problems is emphasized so that graduates are

equipped to learn and use the most imaginative and rigorous new works as they are developed.

4. To prepare the graduate to contribute to the solution of a variety of managerial problems after only a short time with an organization. The student will learn to adapt and apply the fundamental theories of basic disciplines to the solution of specific problems. Training for a specific position in any given industry, in the opinion of the faculty, is of less importance than education for a broader range of positions which will provide the student with maximum flexibility in his career choices.

Educational Philosophy

The M.B.A. program is oriented toward the application of basic disciplines and applied in the solution of business problems. This approach implies that the administrator should be able to simplify a complex situation into a form that is amenable to solution. Therefore, students need to become expert at successive relaxation of assumptions and need to have an appreciation for selection of simplifying assumptions to which the final decision is relatively insensitive. The pedagogy of the program conforms to this pattern.

Another characteristic of the M.B.A. program is that problems from traditional disciplines are treated simultaneously. Business schools have continually emphasized the "integration" of the various traditional fields in business administration. The strategy selected here is to minimize the degree to which the traditional fields are disaggregated, or "disintegrated," into separate courses. For example, the fields of controllership, finance, international business operations, marketing, and production all require much common knowledge. Our intent is to educate the students in a manner that emphasizes the essential decision characteristic of the problem, with applications in the above fields as special cases of the central concepts. Thus, the Duke M.B.A. should be reasonably flexible in moving from one part of the firm to another. He should be able to learn quickly and to transfer lessons learned in one segment of the firm to other appropriate segments. He should be well prepared to depart from tradition when innovation is needed.

A third major characteristic of the pedagogical strategy is to teach the student something about the business world as it is—but to do so within the general context of concept oriented courses. The curriculum must, therefore, be planned in two major dimensions: (a) concepts and theoretical foundations, and (b) facts needed to provide decision practice and to inform the student about current conditions and practice in business. The greater part of the task of learning the facts of the world is left to the period of professional practice. We have chosen this method of teaching for two reasons: first, the University has an advantage in

teaching concepts and modern tools; and second, firms have an advantage in providing experiences from which description of current practice and conditions is obtained.

Course of Study

The educational approach of the M.B.A. curriculum is based on the theoretical foundations that underlie the science of management and its operational techniques. These foundations emphasize (*a*) experience in the conceptual formulation of both problems and solutions, (*b*) innovation in the design of strategy, organization and policy for business, and (*c*) preparation in the basic skills essential to continued professional development in the area of decision analysis. The faculty believes that the most practical preparation lies in conceptual and theoretical understanding of professional practice, both as it is and as it ought to be.

The M.B.A. curriculum includes in its core program knowledge common to each of the areas of professional interest offered by the School. This includes both the theoretical foundations and tools of analysis. Such an arrangement permits the student maximum flexibility in the development of his individual interests, both while he is engaged in academic preparation and after graduation. The final semester is devoted almost entirely to the development of a field of application elected by the student.

The M.B.A. requires four semesters of full-time work, totaling 64 units of graduate course credit.

The schedule of courses is listed on page 7. The first year is organized into four main courses, quantitatives methods, managerial economic theory of the firm, information systems, and organization theory, plus a one-semester course in macroeconomic analysis.

In the four months between the first and second years the M.B.A. student is expected to gain practical experience through employment. This experience, apart from its obvious benefits to the student, aids him in his selection of an area of study for his practicum, which is part of his fourth semester's work.

The purpose of the work in the third semester of the M.B.A. program is to provide advanced tools of analysis and a general framework of understanding within which those tools can be applied. The relationships among the parts of the firm and the relationships between the firm and the various sectors of its environment can be classified into those which are competitive and those which are cooperative. (Obviously, the relationships between any two organizations are likely to contain both competitive and cooperative aspects.) The primary thrust of the work in this semester is focused on more advanced analysis of how the

firm's internal relationships and actions are related to the firm's externa relations and actions. Since the legal framework is closely related to these matters, an introduction to some aspects of the law is included. Pre requisites for this set of courses are the courses in the first-year M.B.A program.

The final semester of the M.B.A. program is oriented toward the ap plication of the foundations built during the first three semesters. Each student is required to elect two courses in the applied fields (each o which is designed to prepare students for immediate professional prac tice) and a practicum (Business Administration 390). This latter course is an advanced and individually arranged investigation into a topic o prime interest to the student and normally is expected to involve the development of a solution to a problem of some economic enterprise The elective work is selected from the following fields: controllership finance, marketing, production, operations research, manpower planning accounting, econometrics, and other fields which may be arranged by the student in consultation with his academic adviser. A course in the public policy of the firm (Business Administration 350) is also required.

The second year student will have a two week period during the spring semester in which no classes are scheduled. This period is to be used for concentrated work on the practicum and for employment interviews.

Advanced Standing

The Duke M.B.A. program is very different from most undergraduate work in business administration. As a result, only on rare occasion is a student likely to be exempt from one or more core courses. In these instances, more advanced work is substituted.

Schedule of Courses

First Year

Fall Semester (Required)

300	Managerial Theory of the Firm	5 units
310	Foundations for Quantitative Analysis	5 units
320	Management of Information and Control Systems	2 units
330	Organization Theory and Management	4 units
		16 units

Spring Semester (Required)

301	Managerial Theory of the Firm	4 units
311	Foundations for Quantitative Analysis	4 units
321	Management of Information and Control Systems	4 units
331	Organization Theory and Management	2 units
341	Macroeconomic Analysis	2 units
		16 units

Second Year

Fall Semester (Required)

302	Cooperative Relations and Decisions	2 units
303	Competitive Relations and Strategies	3 units
304	Cooperative-Competitive Relations and Decisions	2 units
312	Operations Research	4 units
332	Organization Design	3 units
349	Law as a constraint for Business	2 units
		16 units

Spring Semester

350	Public Policy of the Firm	3 units
390	Practicum	5 units
	Elective	4 units
	Elective	4 units
		16 units

The Doctor of Philosophy Program

The Ph.D. Program, recently approved by the Graduate School, will be available to the graduates of the M.B.A. program and others beginning in the fall of 1972. The objective of the Duke Ph.D. Program is to prepare candidates for academic or business careers. Implicit in this objective is the requirement that the candidate should develop the capability to engage effectively in research related to the management of complex organizations.

General requirements for the Ph.D. degree at Duke University are described in the *Bulletin of The Graduate School.* Specific requirements of the Graduate School of Business Administration are:

1. Completion of the M.B.A. program offered at Duke University by the Graduate School of Business Administration, or its equivalent.
2. Completion of one year of study at Duke University (30 units in residence) beyond the level of the M.B.A. degree, and satisfactory performance on preliminary examinations in areas of: economic theory, quantitative methods, and the elected area of business administration.
3. Satisfactory completion of a doctoral dissertation.
4. Compliance with all requirements of the Graduate School.
5. The candidate for the Ph.D. in Business Administration is required to present evidence of preparation in a research tool area pertinent to his own professional program and plans. The satisfactory completion of the foreign language requirement as established by the Graduate School is

accepted as meeting this requirement. Advanced study in some discipline (e.g., mathematics) which can be shown to be of particular relevance to the individual's program may be used to meet this requirement after approval of the faculty of the Graduate School of Business Administration and of the dean of the Graduate School.

Course of Study

The course requirements for the year of study beyond the M.B.A. degree will be:

1. One semester of advanced microeconomic theory and one semester of advanced macroeconomic theory.

2. One year of advanced mathematics and/or statistics (i.e., two courses) to be selected from offerings of the Department of Mathematics. In cases of interest in areas not offered by the Mathematics Department, a tutorial may be designed to provide the needed educational experience.

3. A minimum of one course in Philosophy of Science for Social Sciences.

4. A minimum of three courses to be offered on a tutorial basis to fit the student's interests in the area of administration. These courses are to be designed by faculty members in the areas involved to meet both the objectives of the program and the more specific professional objectives of the student. Each of these tutorial courses will require extensive reading in the historical and current literature and a demanding research program. This group of courses, combined with those in 1-3 above, will provide the student with in-depth expertise in both subject matter and research procedures.

5. A minimum of two courses selected from any area in the University which are proper as part of the candidate's professional preparation. The candidate's adviser must approve the courses selected.

One illustrative program for the year of course work is as follows:

1. Economic Theory	6 units
2. Mathematics	6 units
3. Philosophy of Science	3 units
4. Tutorials in:	
Information Systems	6 units
Operations Research	3 units
5. Electives in:	
Finance	3 units
Computer Science	3 units
	30 units

We expect that most students will be prepared to take preliminary examinations in Economic Theory, Quantitative Methods, and an elected area of Business Administration at the end of the year of course work. The second year following completion of the M.B.A. program will be devoted to work on the doctoral dissertation on an approved topic related to the identification, extension, or unification of scientific knowledge pertinent to management of economic enterprises.

Resources for Study

Library

The new section of the William R. Perkins Library has shelf space for 1,500,000 books, seats for 1,250 students, and a staff of 200. When renovation of the old building is completed in the fall of 1969, the entire complex will provide room for 2,500,000 books and 2,100 students. The student stations include about 700 carrels, 200 closed and 500 open, of which 475 are in the new building.

Four of the six floors of the building are above ground. On the main floor—at ground level—are the reference and loan departments, bibliography, current periodicals, interlibrary loan, and all units of technical processing. Documents, newspapers, microtext collection, and the microphotography laboratory and other copying facilities are located on the floor below. The administrative offices and graduate reading room are on the second floor, and manuscripts and archives are on the third. Twelve small reading and study rooms are provided in the stacks for the departments in the humanities and social sciences that grant the doctorate. Four seminar rooms are also provided in the stacks.

Microphotography and Photographic Services utilize modern equipment for reproducing printed and manuscript materials and for reading microfilm materials.

The combined University Libraries contained 1,940,000 volumes in the summer of 1968. In addition to the collection in the Perkins Library, there are eight School and departmental libraries. Approximately 10,000 periodicals and 165 newspapers are received currently. The Graduate School of Business Administration has a designated reading room in the Library containing approximately 6,000 volumes selected to provide especially convenient access to graduate business students.

Computation Center

The Duke University Computation Center is intended to provide the University faculty and students with a facility for research and instructional computing needs.

The Center is presently equipped with an IBM System 360 Model 30 (24K bytes, two tapes, card reader, printer. Calcomp plotter) which is connected by high-speed telephone lines to an IBM System 360 Model 75 (512K bytes, 2,000K bytes LCS, two 2314 disk facilities, data cell, seven tapes, card reader, printer) located at the Triangle Universities Computation Center which is in the Research Triangle Park. In addition, there exists a medium speed terminal (IBM 2780 card-reader and printer), two IBM 1050 slow speed terminals, one of which is located in the building housing the Graduate School of Business Administration, and one IBM 2741 Keyboard terminal connected to the Triangle Universities Computation Center.

Student Life

Living Accommodations*

Housing

Duke University provides living accommodations for graduate-level resident students, both married and unmarried.

Rooms in residence halls, spaces in Town House Apartments, or other rental units may be reserved by single applicants only if they have been accepted by the Graduate School of Business Administration and after the required $25 room or security deposit has been paid to the Duke University Bursar.

Assignment priority is established by the date of receipt of completed applications with deposits in the Office of the Director of Housing Management.

Residence Hall space available for single graduate and professional students totals 197 beds for men and 87 beds for women. Facilities for single graduate and professional students are located on the northern side of the campus, a short walk from the Graduate School of Business Administration.

Town House Apartments, located between East and West campuses, include 30 two bedroom units, each furnished for three graduate women

*Information pertaining to residence halls and apartments is subject to change prior to September, 1969.

students. Two students occupy the master bedroom, the third occupies a smaller bedroom. A living room, kitchen, and one and a half baths complete these attractive living units.

For Married graduate and professional students, Duke University has 98 one bedroom luxury apartments under lease for a period of three years. All units are within walking distance of the campus.

Regulations governing room and security deposits and occupancy of rooms and apartments will be provided by the Office of Housing Management at the time application forms are forwarded to accepted students. Occupants within each type of housing are expected to comply with the appropriate regulations.

Application forms and detailed information on graduate housing will be mailed when the Graduate School of Business Administration has notified the Office of Housing Management of official acceptance of the student. Single women may express a choice for the type of housing desired. Requests for information and completed applications for rooms and apartments are to be returned, with required deposits, to the Office of Housing Management, Duke Station, Duke University, Durham, N.C. 27706.

Food Services

Food service on both the Woman's College Campus and the West Campus is cafeteria style. The dining facilities on the West Campus include one straight-line cafeteria with multiple-choice menus, a free-flow service area which includes cafeteria counters as well as a grill, and a table service dining room called The Oak Room where full meals and *a la carte* items are served. The Graduate Center has a cafeteria open at meal hours, and a coffee lounge which is open until 11:00 p.m. Because of the large number of those served in the dining halls, it is not possible to arrange special diets for individual students.

Services Available

Medical Care

The complete medical facilities of the Duke University Medical Center are available to all members of the University community. To secure the benefits of the Student Health Program, a graduate student during the term or semester in which the illness occurs must (1) in the Summer Session term be registered for at least 1 unit of research or 3 units of course work, (2) prior to completing minimum residence requirements be registered for at least 9 units per semester and thereafter according to the fee schedule in the *Bulletin of the Graduate School.* Students are not

covered during vacations and their dependents and members of their family are not covered at any time. Care is provided for men at the Student Health Office in Duke Hospital and for women at the Woman's College Infirmary and in the Student Health Office.

The service provided includes hospitalization in Duke Hospital, when recommended by the Hospital staff, to a limit of thirty days in the fall and spring semesters—six days in the Summer Session; medical and surgical care under the supervision of a senior physician or surgeon; drugs, X-ray work, and ward nursing. Students pay for board while in the hospital. Excluded from the service are refraction of eyes, treatment of teeth, and of all chronic and pre-existing conditions, and elective surgery.

Off-campus injuries and accidents are not covered by Student Health. Graduate students are urged to carry adequate health insurance to supplement Student Health Program services. If students have insurance providing hospitalization, surgical, or medical benefits, the benefit shall be applied to the cost of their medical care.

Students whose course load entitles them to full coverage under the Student Health program are eligible for a complementary insurance policy which then comprises protection for the entire calendar year. Concerning this complementary policy inquire of the dean of the Graduate School. *Foreign students are required to hold this or another acceptable policy.*

The Duke University Counseling Center

Through the Counseling Center, the University provides a professional counseling service designed to aid students in gaining a better understanding of themselves and the opportunities available to them. Counseling is available in the areas of career planning, educational opportunities, and personal and social adjustment.

The Center maintains files of educational and vocational information related to career planning, graduate educational programs and fellowships, and study aids.

National and University-wide testing programs are administered by the Center. A continuing program of research in the areas of counseling and testing is also carried on by the staff of the Center.

Appointments Office (Placement)

Duke University provides outstanding placement services for students and alumni. On-campus interviews are arranged with a broad spectrum of American industry for those persons who register with the Placement Office. It is expected that all students enrolled in the second year of the M.B.A. program will make their off-campus interview trips during the Spring holiday which will normally occur during the last week of February or the first week in March.

Student Activities

Graduate students new to Duke University may be reminded that they are welcomed to use such recreation facilities as swimming pools, tennis courts, golf course, and to affiliate with choral, drama, and religious groups. They may become junior members of the American Association of University Professors and may affiliate with Phi Beta Kappa and social fraternities. Wives of graduate students may join the very active Graduate Wives Club.

A full program of co-curricular and recreational activities is presented by the University Religious Council, Y.M.C.A., Y.W.C.A., Student Union, Student Government Organizations, and Clubs. Most programs are open to the entire University community. Inquiries should be directed to the Student Activities Office—202 Flowers Building.

The Information Center, Page Box Office, Coffee House, Publications, Art Gallery, Meeting Rooms, Lounges, Music Listening Rooms, and recreational facilities are located in the Flowers and Union Buildings.

Motor Vehicles

Each student possessing or maintaining a motor vehicle at Duke University shall register it annually at the beginning of the fall semester. If a student acquires a motor vehicle and maintains it at Duke University after academic registration, he must register it within five (5) calendar days after operation on the campuses begins. Resident students are required to pay an annual parking fee of $30.00 for each automobile and $10.00 for each two-wheeled motor vehicle. If a vehicle is removed from the campus premanently prior to February 15 and its decale returned to the place of registration by that date, there will be a partial refund on the registration fee.

At the time of registration of a motor vehicle, the following documents must be presented: (a) state vehicle registration certificate; (b) valid driver's license; (c) satisfactory evidence of automobile liability insurance coverage with limits of at least $10,000 per person and $20,000 per accident for personal injuries, and $5,000 for property damage, as required by the North Carolina Motor Vehicle Law.

Conduct of Students

Duke University expects and will require of all its students continuing loyal cooperation in developing and maintaining high standards of scholarship and conduct.

The University wishes to emphasize its policy that all students are subject to the rules and regulations of the University as currently in effect or, from time to time, are put into effect by the appropriate authorities of the University.

Any student, in accepting admission, indicates his willingness to subscribe to and be governed by these rules and regulations and acknowledges the right of the University to take such disciplinary action, including suspension and/or expulsion, as may be deemed appropriate, for failure to abide by such rules and regulations or for conduct adjudged unsatisfactory or detrimental to the University.

Admission

Applicants for admission to the Duke M.B.A. program should have earned a baccalaureate degree with a sufficiently good record of performance to demonstrate ability to engage in rigorous analysis. The only specific course requirement is one year of the calculus at the college level. Courses are offered jointly by the Department of Economics and the Graduate School of Business Administration late each summer for students whose preparation in mathematics is inadequate.

Admission to the M.B.A. program is granted to those students who, in the opinion of the Admissions Committee, can successfully complete the academic program and have the ability to assume a role of leadership in management. The evidence used by this committee includes:

1. Academic achievement.
2. Work experience or extracurricular activities.
3. Score on the Admission Test for Graduate Study in Business.
4. Personal recommendations.

No minimum standards of performance in any one area have been established, but convincing evidence of ability to complete the program is essential.

Students admitted to the M.B.A. program may matriculate at the beginning of the fall semester only. For those with a deficiency in mathematics, the deficiency must be corrected prior to the beginning of classes for the fall semester. The Graduate Record Examination is not an acceptable substitute for the Admission Test for Graduate Study in Business.

Application forms and information about financial aid may be obtained by writing to:

Director of Admissions
Graduate School of Business Administration
Duke University
Durham, North Carolina 27706

Admission credentials include:

1. A completed application form.
2. Two copies of all current transcripts from schools attended. (Tear forms included in the bulletin may be used to request transcripts.)
3. Before matriculation two copies of final transcripts from all schools attended must be included in the file.
4. Personal recommendations as required.
5. Score on the ATGSB examination.

Deadlines for Application

It is the applicant's responsibility to make certain that his application is completed and in order. The Graduate School of Business Administration follows progressive admission policy with the first group of students being notified of their acceptance by February 15. The application for financial aid will be sent to those requesting it upon completion of their application for admission. All applications for financial aid must be completed and in the hands of the Financial Aid Committee by February 15 for an award to be made the following fall.

Admission Test for Graduate Study in Business

The Admission Test for Graduate Study in Business, required of all applicants, is administered by the Educational Testing Service for a fee of $10. Detailed information about the Test and application forms may be obtained by writing directly to the Educational Testing Service, Box 966, Princeton, New Jersey 08540.

The examination is given at many centers throughout the United States and abroad. Arrangements to take the test at an established center must be made two weeks before the test date (six weeks at established foreign centers). The examination is given in early February, April, July, and November. Special Centers may be arranged for persons distant from established centers. Requests for such accommodation must be made at least two months prior to the selected test date.

Fellowship applicants must take the test in November or February. Other applicants may take it as late as April, but the earlier dates are recommended.

Additional Procedure for Foreign Students

Fully qualified students from outside the United States are welcomed in the Graduate School of Business Administration to take courses or to study toward a degree. In applying for admission the foreign student should, in addition to the information required of all students, submit with his application (1) if his native language is not English, certification of ability to use English through scores on tests provided by the Educational Testing Service (TOEFL), the University of Michigan Language Institute, or the American University Language Center, (2) a statement certified by a responsible person that his finances are sufficient to maintain him during his stay at Duke University, and (3) a statement by a qualified medical doctor describing any emotional or physical illness the applicant has had during the previous five years.

Notification of Status

When admission is approved, the student will receive a letter of admission and an acceptance form. *The process of admission is not complete until the statement of acceptance has been returned.*

Applicants who are admitted will be offered full admission or provisional admission. *Provisional admission* is offered (1) to students who, for a trial period of one semester or a minimum of 12 hours of course work, appear to warrant admission but do not fully comply with admission requirements, or (2) to students who are admissible except that the application lacks a letter of recommendation, a supplementary transcript, required test scores, or some other required information.

Financial Information

Living Accommodations

Housing

Rooms in residence halls are normally rented for the academic year, but for no period less than one semester or specified term. A limited number of single rooms are usually reserved for returning students.

Each student assigned to the Town House Apartments is currently charged $495.00 for the academic year on the basis of three individuals to an apartment. Utility charges are included in these rates. Rental rates for space in double residence halls rooms range from $325 to $355 for the academic year.

Current rates for apartment units for married students range from $126 per month (including utility allowances) for an unfurnished one bedroom unit to $175 per month (without utilities) for a partially furnished three bedroom unit.

No refund on residence hall room rent or the rent for spaces in Town House Apartments is made to students who withdraw after the date of registration, except for those who involuntarily withdraw to enter the armed services. Such refunds will be made in accordance with the University's established schedules.

Married Students who desire assignment to apartments will be offered

leases for specific periods. Cancellation procedures are stipulated in the agreements.

Food Services

Food service, on both the Woman's College Campus and the West Campus, is described under Living Accommodations. The cost of meals approximates $2.50 to $3.00 per day, depending upon the needs and tastes of the individual.

Tuition and Fees

The following table shows the tuition and fees collected from all students. All charges for each semester are due and payable, unless otherwise specified, at the time of registration for that semester and are subject to change without notice. No student is admitted to classes until arrangements have been made with the Bursar of the University for the settlement of his tuition and fees.

Tuition per semester ($60.00 per unit)	$950.00
Athletic fee, optional, per year, not including federal tax, payable in the fall semester	25.00
Binding fee, three copies of thesis or dissertation, other copies optional, $5.00 a copy	15.00
ETS Foreign Language Test, each administration, payable to the University Counseling Center	8.00
In absentia fee, due on date of registration, one unit per semester	60.00
Late registration fee	10.00
Microfilming fee, doctoral degree only, upon final submission of dissertation	25.00

Tuition for a full semester program amounts to $950.00. Part-time tuition is computed at the rate of $60.00 per unit. After the day of registration, no refund of tuition will be made except for involuntary withdrawal to enter the armed services.

Estimated Expenses in the Academic Year

The following table represents an estimate of a graduate student's basic expenses for one academic year for a full program of work. These figures do not include allowances for recreation, travel, clothing, and other miscellaneous items which vary according to the needs and tastes of the individual.

	Low	*Moderate*	*Liberal*
Tuition and fees*	$1900.00	$1900.00	$1900.00
Room Rent†	325.00	325.00	420.00
Board	550.00	600.00	650.00
Laundry	40.00	45.00	50.00
Books	70.00	90.00	110.00

*Tuition rates are guaranteed for the two years required to obtain the M.B.A. degree.

†In the Graduate Center. Low and Moderate schedules are for double occupancy, Liberal schedule is for single occupancy.

Financial Aid

Financial aid for M.B.A. students is in the form of scholarships and loans. In some instances a second-year M.B.A. student may be given a research assistantship. Students should not plan to earn money by part-time employment during the academic year because the demands of the educational activities are such as to make part-time employment almost impossible.

There is a period of four months between the first and second years during which the student is expected to engage in employment which supports and develops his academic work. During this period a portion of the earnings may be saved to assist in covering the expenses of the second year in the program.

Courses of Instruction

First Year M.B.A. Courses (Required)

The purpose of the work in the first year of the M.B.A. program is to provide the basic knowledge and skills required to understand and analyze the operations of a firm in a market economy. The topics are ordered in this first year to allow sequencing, which will serve to reinforce the knowledge gained in one course by follow-up in other courses. This sequencing also permits basic assumptions, developed in a tight theoretical structure in one area, to be relaxed and examined in subsequent work in others. Prerequisites for the first year's work are a baccalaureate degree and a one year sequence in the calculus.

B. Adm. 300-301. *Managerial Theory of the Firm.* (5 units Semester I and 4 units Semester II)

B. Adm. 310-311. *Foundations for Quantitative Analysis.* (5 units Semester I and 4 units Semester II)

B. Adm. 320-321. *Management of Information and Control Systems.* (2 units Semester I and 4 units Semester II)

B. Adm. 330-331. *Organization Theory and Management.* (4 units Semester I and 2 units Semester II)

B. Adm. 341. *Macroeconomic Analysis.* (2 units Semester II)

Second Year Courses—Fall Semester (Required)

The purpose of the work in the third semester of the M.B.A. program is to provide advanced tools of analysis and a general framework of understanding within which those tools can be applied. The relationships among the parts of the firm and the relationships between the firm and the various sectors of its environment can be classified into those which are competitive and those which are cooperative. (Obviously, the relationships between any two organizations are likely to contain both competitive and cooperative aspects.) The primary thrust of the work in this semester is focused on more advanced analysis of how the firm's internal relationships and actions are related to its external relations and actions. Since the legal framework is closely related to these matters, an introduction to some aspects of the law is included. Prerequisites for this set of courses are the courses in the first-year M.B.A. program. The first two courses listed are offered throughout the third semester of residence.

B. Adm. 312. *Operations Research.* (4 units)

B. Adm. 349. *Law as a Constraint for Business.*

The first three courses listed below (B. Adm. 302, 303, and 332) are taught during the first eleven weeks of the semester and are designed to provide the basis for B. Adm. 304 which occupies two-thirds of the student's time for the last three weeks of the semester. (2 units)

B. Adm. 302. *Cooperative Relations and Decisions.* (2 units)

B. Adm. 303. *Competitive Relations and Strategies.* (3 units)

B. Adm. 332. *Organization Design.* (3 units)

B. Adm. 304. *Cooperative-Competitive Relations and Decisions.* (2 units)

Second Year Courses—Spring Semester

This final semester of the M.B.A. program is oriented to bring to application the foundations built during the first three semesters. Hence, the bulk of the work in this semester is directed toward understanding and solving problems of the firm, using the tools of analysis and the conceptual framework developed earlier. The only specifically required courses are B. Adm. 350 and B. Adm. 390. Each student must elect two other courses offered in the School or select with the approval of a faculty advisor acceptable courses in other departments of the University which meet the specific needs of the student.

B. Adm. 350. *Public Policy of the Firm.* (3 units)

B. Adm. 390. *Practicum.* (5 units)

B. Adm. 313. *Advanced Operations Research.* (4 units)

B. Adm. 323. *Controllership.* (4 units)
B. Adm. 324. *External Reporting and Auditing.* (4 units)
B. Adm. 333. *Manpower Planning and Management.* (4 units)
B. Adm. 351. *Finance.* (4 units)
B. Adm. 353. *Marketing.* (4 units)
B. Adm. 355. *Production.* (4 units)

Physician's Assistant Program

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General Information

History and Development

Duke University's concept of the Physician's Assistant Program developed in the early 1960's as a result of an unsuccessful attempt to initiate a postgraduate physician's education program. When Dr. Eugene A. Stead, who was then chairman of the Department of Medicine at Duke University Medical Center and the founder of the Physician's Assistant Program, analyzed the reasons for the failure of the postgraduate physician education program, he discovered that the practicing physicians had no time which they could reasonably set aside for the purpose of education. Dr. Stead felt that perhaps ancillary health personnel could be economically trained to competently assume many of the physician's tasks, thereby giving him more time. After several months of research Dr. Stead began to notice ancillary personnel were already being trained to do many technical jobs within the Medical Center which had previously fallen within the realm of physician responsibility. The needs for medical guidance and coordination of these programs was immediately self-evident.

In accordance with these observations, on April 17, 1965, Dr. Barnes Woodhall, then vice-provost for medical affairs, Duke University, appointed an *ad hoc* committee chaired by Dr. Andrew G. Wallace, assistant professor of medicine, to look into these programs. This committee met on four occasions during the spring of 1965 and came to the

following conclusions: (1) The need for extensive numbers of highly trained technical personnel existed both within and outside the Medical Center; (2) Two types of allied health personnel were needed, one very highly skilled and limited to a specific area and the other a more advanced individual with a broad and sophisticated background (i.e., vocational and professional); (3) There existed the need for a core curriculum to allow for academic advancement and variation in careers; (4) There must be an attempt to define the specific needs to resolve the individual manpower problems; (5) There must be a method of attracting qualified applicants and providing them with a functional and compact curriculum. As a result of these conclusions, a report was made to the vice provost and this report is reproduced, in part, in the following paragraphs.

> The situation which generated the ideas set forth in this report can be stated quite simply: *personnel in the health field are too few in number and inadequately trained to meet the demands placed on the medical profession.* In our view, medical schools and nursing schools, as presently structured, cannot supply sufficient numbers of doctors or career-oriented nurses to meet this demand. Furthermore, no workable solution to this problem can be predicted solely on the reshuffling of available talent.
>
> The proposal to be outlined calls for the definition of a new member of the health team called a "Physician's Assistant." The physician's assistant is seen as a new category within the structure of the health field, designed to provide a career opportunity for men functioning under the direction of doctors and with greater capabilities and growth potential than informally trained technicians. . . . The physician's assistant would receive most of his training within a clinical discipline of defined scope, in order to develop quality of performance and an understanding of illnesses in the field.
>
> The task then is to provide an educational framework designed to attract career-oriented men and supply them with the skills to function effectively as a physician's assistant. Selection of students and curriculum should reflect this goal. It is important, we believe, to differentiate this program and its goals from previously unsuccessful attempts to develop male nurses. This program calls for intensive training in areas which complement available talents without attempting to replace available talents. Training and salary potential should be consistent with a career in the health field and should reflect the ability of trained assistants to increase the earning power of their employer by an amount appropriate to their projected salary.

On July 1, 1965, initial limited funding was made available by the National Heart Institute to further evaluate the prospect of a physician's assistant. On October 4, 1965, four candidates, all of whom were ex-Navy corpsmen, were chosen as initial students.

On February 1, 1966, a second *ad hoc* committee was appointed by Dr. William G. Anlyan, dean of Duke Medical School, which was chaired by Dr. Stead. The purpose of this committee was to further explore the development of physician's assistants, including the types of projected roles, the educational background requirements, and the scope of their responsibilities and activities. Five days later Dr. Stead read a preview of the program before the 62nd Annual Congress on Medical Education, sponsored by the American Medical Association, in Chicago.

This new committee first met under Dr. Stead's chairmanship on February 16, 1966, at which time the progress of the program was reviewed, and three primary questions were raised. These were: (1) How much of the plan for personnel training is practical and possible? (2) What sort of certification should be given to the student? (3) What provisions should be made for additional training for the student, as determined by his ultimate employment?

At the committee's second meeting the following month, three criteria were cited as the main determining factors in the ultimate success of the concept. These were: (1) physician's acceptance of physician's assistants, (2) society's acceptance of physician's assistants, and (3) the physician's assistant's individual competence.

Throughout 1966, meetings of the second committee were spent in providing a continuing review of the program, researching possible sources of funding, and beginning an in-depth search into the legal aspects of the use and development of such personnel.

On April 13, 1966, in response to an inquiry from the committee, the attorney general's office ruled in reference to the Nursing Practice Act that "Nothing in this article shall be construed in any way to prohibit or limit performance by any person of such duties as specified mechanical acts in the physical care of a patient when such care and activities do not require the knowledge and skill of a registered nurse or licensed practical nurse, *or when such care and activities are performed under the orders or directions of a licensed physician, licensed dentist, or registered nurse.*" It was the committee's recommendation at the time that regardless of this interpretation, efforts should be made to move in the direction of modifying the Medical Practice Act so that it would allow the physician more leeway in the delegation of certain tasks.

With this information in mind, tasks that could be accomplished by an assistant were defined and a seemingly appropriate curriculum was developed. Also considered in the development of the program and the curriculum was the fact that each physician is different from every other physician to a degree that the ultimate definition of the role of an assistant would be impossible. The emphasis was, therefore, placed on developing a training program that would provide a core vocabulary and skills for physician's assistants with the clinical emphasis on the development of an assistant for the general practitioner or general internist. It was recog-

nized that the final training of each physician's assistant must be provided by the physician with whom he worked.

In September, 1967, the Department of Community Health Sciences assumed administration of the Physician's Assistant Program under the direction of the department chairman, Dr. E. Harvey Estes, Jr. On October 1, 1967, the program graduated its first three students, all of whom were offered and accepted employment in the Medical Center. In July, 1968, five more students who had attended the course on a part-time basis were graduated and on September 26, 1968, the second class of nine students received certification. To date the program has seventeen graduates and has thirty-three students enrolled on a full or part-time basis.

Future plans call for an increasing enrollment each year to a total class size of 100 students to be realized by 1972.

Relationship to the University

The students in the Physician's Assistant Program are registered as special students and are not considered as Duke University undergraduate students. At the completion of the two year training program the students are given a certificate of accomplishment by the Medical Center. This is not a degree, and though the students are given credit for their courses and receive transcripts of their grades from the university, there is as yet no means of application of these credits toward a degree through Duke University. Efforts are currently in progress toward establishing a B.S. level degree, through our own undergraduate college and other colleges in the area.

Legal Status

Almost every physician who considers using a physician's assistant inquires about the legal status of such individuals. There is also concern among hospitals and hospital administrators. Because of this universal interest and because of the need for an orderly program development two conferences have been held at Duke in which this was a major topic. The first meeting was attended by leaders of the Medical Society of the State of North Carolina, including representatives of the Board of Medical Examiners, the Legislative Committee, and the Medico-legal Committee. The North Carolina Nurses' Association was also represented as was the American Medical Association and several individuals who represented schools planning the development of such programs. The second meeting

was held in the fall of 1968, and involved persons planning such programs in other hospitals and universities.

In addition to the concern of the individual physicians and hospital administrators regarding new manpower categories, there is also a legitimate concern on the part of those considering such training programs and the medical profession as a whole. The development of such programs without established guidelines, approved and supervised by the medical and nursing profession, will almost certainly lead to chaos. The graduate of one program will not be at all equivalent to the graduate of another, and the public will in all likelihood be served poorly. Because of the number of developing programs and their continuous multiplication, guidelines for curriculum and for legal control are of utmost importance.

Initially it was recognized that an assistant could serve in either a *dependent* or an *independent* capacity. It was generally conceded that on a mass scale the creation of an independent assistant would cause as many problems as it would solve. Experience has adequately demonstrated that although workable in small numbers, independent members at the intermediate level on a health care team end up competing with, rather than complementing, the available health services. Recognition that the development of an independent assistant would be professionally undesirable was accompanied by the realization that increased legal complications would also surround such a development. Consequent to these and other factors, the physician's assistant has evolved along the lines of a dependent professional assistant who participates in various medical and health functions. Time has demonstrated the wisdom of this choice. The legal advantages were soon realized when the attorney general of North Carolina ruled that the physician's assistant could, within the confines of the law, carry out virtually every task assigned by a physician and the only limitation on the assigned functions concerned diagnosis and prescription of care—two functions already ruled out by his dependent role. Beyond these functional limitations, all activity control is under the direction of the physician-employer.

Further development of the legal status, however, is of primary importance. It is clear that the physician must be responsible for the actions of his own dependent assistant, but there are certain legal precedents which make it wise to work toward a legal recognition of this and other new categories. Licensure and control are closely associated with legal definition. Since the wise or unwise use of such personnel is more likely to be a function of the physician rather than the assistant, some have suggested that the physician user should be licensed rather than the assistant. It is also true that legal definition should be broad enough to encompass a variety of new manpower categories now under development. To consider each on an independent *ad hoc* basis will certainly lead to chaotic rules and regulations.

A scheme suggested as a result of the 1968 conference in Durham, North Carolina, seems workable, and efforts are under way for its implementation. According to this scheme, a permanent committee would be formed, having representatives from medicine, nursing, hospital administration, and the public, and would report to the State Board of Medical Examiners. This committee would be responsible for considering all new manpower training programs in the state. The director of a planned new training program would apply for approval, and submit a summary of its objectives, its faculty, its facilities, the source and selection of candidates, etc., as a part of the application. The committee would tentatively approve or disapprove the program on the basis of this application. If tentatively approved, the program director would submit twice yearly reports on the program, including names, addresses, and employers of all trainees and/or graduates. Each physician (or other health care professional) utilizing one or more trainees or graduates would submit a statement regarding the performance of the assistant. After two years of such observation, the program would receive approval and be renewed every five years. The advantages of the scheme are (*a*) it makes each manpower innovation totally visible to all the existing professional categories, (*b*) it allows an innovation to be eliminated if unproductive or unreliable, and (*c*) it allows flexibility and change in a program before the program is fixed by law. Changes in the laws of the state will still be necessary; and the design of model legislation, applicable to any state, will be a part of the plan. To this time there have been no obstacles in the utilization of graduates in any state.

Current Status and Future Goals

The Physician's Assistant Program is designed to develop a new category of personnel within the structure of the health field who will function as allied health professionals under the direct supervision of physicians. Their sole function will be to assist physicians in their clinical and/or research endeavors.

The physician's assistant is trained to perform responsibly and reliably certain carefully defined skills. In the clinical setting, he learns to take patient histories, do physical examinations, start and regulate intravenous infusions, intubate the G.I. tract, do gastric lavages, biopsies, lumbar punctures, and other procedures classically performed by the doctor. He is trained to monitor vital signs, give medications, and keep progress records as classically performed by nurses. He is also taught to operate certain diagnostic and therapeutic instruments, such as electrocardiographs, respirators, cardiac monitors, and defibrillators, as well as to carry out extensive laboratory studies as commonly done by technicians.



A graduate physician's assistant carries out intricate and highly technical patient diagnostic procedures.

The status of the physician's assistant can best be described as that of an intermediate level professional with sophisticated and extensive technical capabilities. The physician's assistant, in working as a dependent assistant to a physician, provides the physician with many services which supplement available health team talents, thus freeing the physician from those tasks which do not demand his level of education, training, and background for more valuable endeavors.

The majority of education in the program is offered at the Duke University Medical Center and at the affiliated Veterans Hospital. Other hospitals located in Durham and experiences in physicians' offices and community clinics are also part of the training program.

As the Physician's Assistant Program developed under the auspices of the Department of Medicine, other departments eagerly expressed their interest in this type of intermediate level professional to fulfill the manpower needs that exist in virtually every medical and surgical specialty and subspecialty.

Students now have options open in medicine, surgery, and most medical and surgical subspecialties. Further expansion into radiology, psychiatry, pediatrics and obstetrics is currently under way. By providing a generalized but comprehensive background in the didactic portion of the program it is possible to utilize the physician's assstant in virtually every specialty and subspecialty by altering only the contents of the clinical portion. Even alterations to fulfill specialty requirements can follow the same basic clinical structure as developed in medicine, the only difference being a decrease in the scope of material covered and an increase in the depth of learning.

Malpractice Insurance

In this day of widespread litigation the question of malpractice insurance frequently arises. However, as the physician's assistant works as a dependent assistant he is covered under the physician's insurance that covers the rest of his employees. None of the physicians who have hired graduates of the Duke program have had to pay any increase in premiums for this service.

Graduates of the Physician's Assistant Program have the opportunity of pursuing a career in health care administration, direct patient care, research, or any combination of these.



Curriculum

The educational curriculum for the training of physician's assistants covers a period of twenty-four months. Even though applicants may have taken some similar courses in their previous training they are requested to take all of the courses in the program. The reasons for this are to ensure uniformity of the graduates; because the emphasis of the content is directed toward the program goals and may, therefore, be different than other courses; and because experience has demonstrated that the courses serve as a good means for review. In those situations where an applicant seems so well qualified that nothing would be gained by participation in a course, he is given the opportunity to take the necessary examinations and upon satisfactory completion of these is allowed to omit the course. The educational program, though similar in many respects to other medically related programs, is intended to provide the necessary background for the development of a career as a physician's assistant and should not be considered as a stepping stone toward the eventual realization of a Doctor of Medicine degree.

Preclinical Curriculum

The preclinical curriculum covers an academic period of thirty-six weeks and is divided into three phases rather than two semesters. The first and third phases are each six weeks in duration and the second phase, twenty-four weeks. For students going into medicine, surgery, pediatrics, and medical and surgery subspecialties all courses given are required

courses and no elective courses are available. See the section on Courses of Instruction on pages 29-32 of this *Bulletin* for course descriptions.

Preclinical Schedule

Course Number	*Hours Lecture*	*Hours Laboratory*	*Total Hours*	*Credits*
Phase I (six weeks)				
PA 101	18	0	18	1
PA 103	12	36	48	2
PA 105	18	0	18	1
PA 107	18	0	18	1
PA 109	30	0	30	1
Phase II (24 weeks)				
PA 131	24	0	24	1
PA 133	96	0	96	4
PA 135	72	0	72	3
PA 137	240	48	288	6
PA 139	16	32	48	2
PA 141	16	32	48	2
PA 143	16	32	48	2
PA 145	48	0	48	2
PA 147	0	48	48	1
Phase III (6 weeks)				
PA 181	24	0	24	1
PA 183	18	0	18	1
PA 185	12	60	72	2
PA 187	12	12	24	1
PA 189	18	0	18	1
PA 191	24	0	24	1
Total (36 weeks)	732	300	1032	36

Clinical Curriculum

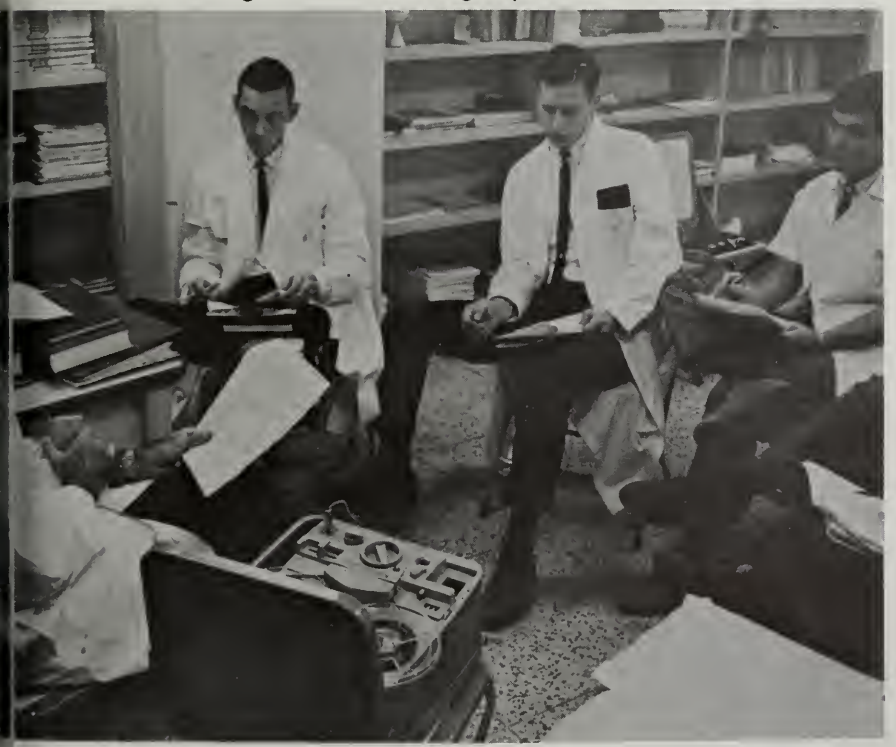
The clinical curriculum of fifteen months consists of thirty-eight weeks of required rotations, twenty-four weeks of elective rotations, and two weeks for vacation. It is during this aspect of the training program that the student is expected to develop expertise in the application of his preclinical learning. See the section on Courses of Instruction, pages 29-32, for course descriptions.

Clinical Schedule

Hospital Rotations

	Duration	*Credits*
Inpatient Service	8 weeks	6
Outpatient Service	8 weeks	6
Health Clinic	4 weeks	3
Library Research	2 weeks	1
Pulmonary Function, Inhalation Therapy	4 weeks	3
Elective	8 weeks	6
Elective	8 weeks	6
Elective	8 weeks	6
Outside Rotations		
Administration	4 weeks	3
Outside Physician	8 weeks	6
Total	62 weeks	46

Clinical teaching is done in small groups with the house staff.



Resources for Study

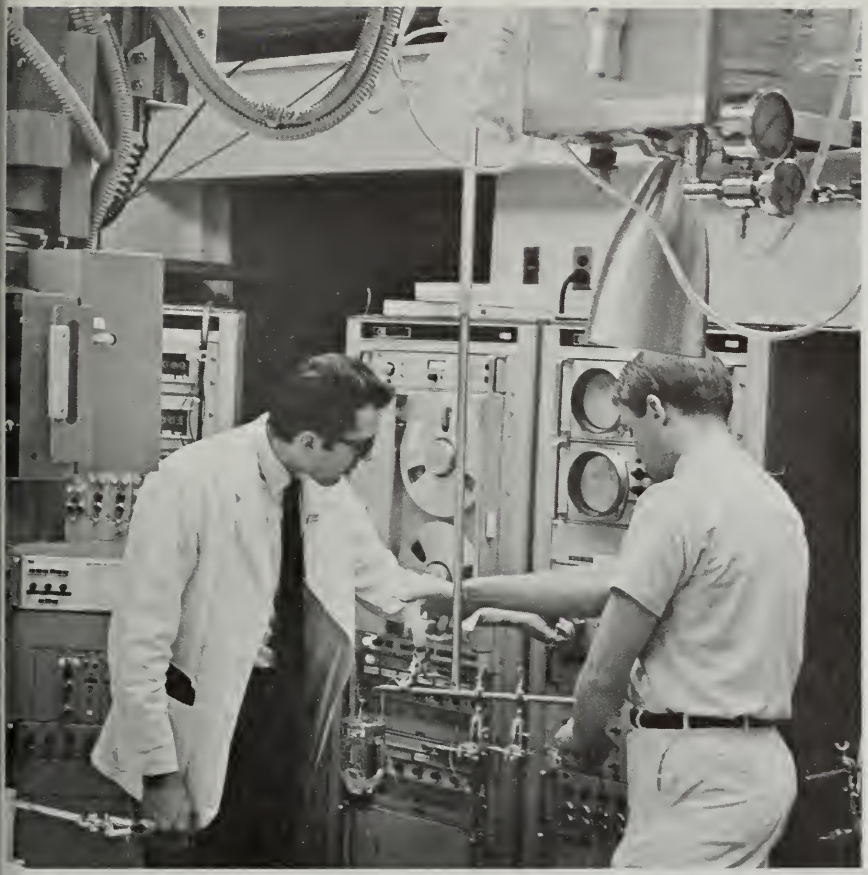
Medical Center Library

The Medical Center Library, located in the Davison Building, attempts to provide all services and collections necessary to further educational, research and clinical activities in the medical field. Extensive reference and bibliographical services are provided. The collection exceeds 90,000 volumes and 1,700 periodicals are received currently.

The Trent Collection in the history of medicine is an unusually fine one, rich in manuscripts and rare books, and provides an opportunity for study and research as well as casual reading in the field.

Duke Hospital

Duke Hospital is an integral part of the Medical Center and currently has 800 beds and 23 bassinets. The hospital performs the dual functions of professional education and patient care. Comprehensive diagnostic and treatment facilities are provided. Different levels of patient care are provided, ranging from the intensive care units, through the conventional treatment sections to minimal care units. Private, semiprivate, and ward accommodations are available. Over 20,000 patients are admitted each year. The approximate daily census by service is as follows:



A graduate physician's assistant utilizes his training and background in the development and implementation of a modern computerized cardiac research center.

Surgery, including the surgical subspecialties, 310; Medicine, 205; Pediatrics, 55; Psychiatry, 50; and Obstetrics-Gynecology, 50. Surgical facilities include 18 operating rooms where over 15,000 surgical procedures are performed annually. Four obstetrical delivery rooms are maintained. Special diagnostic and treatment units are also available, such as the recovery room, cardiac catheterization laboratory, and hyperbaric oxygenation chambers.

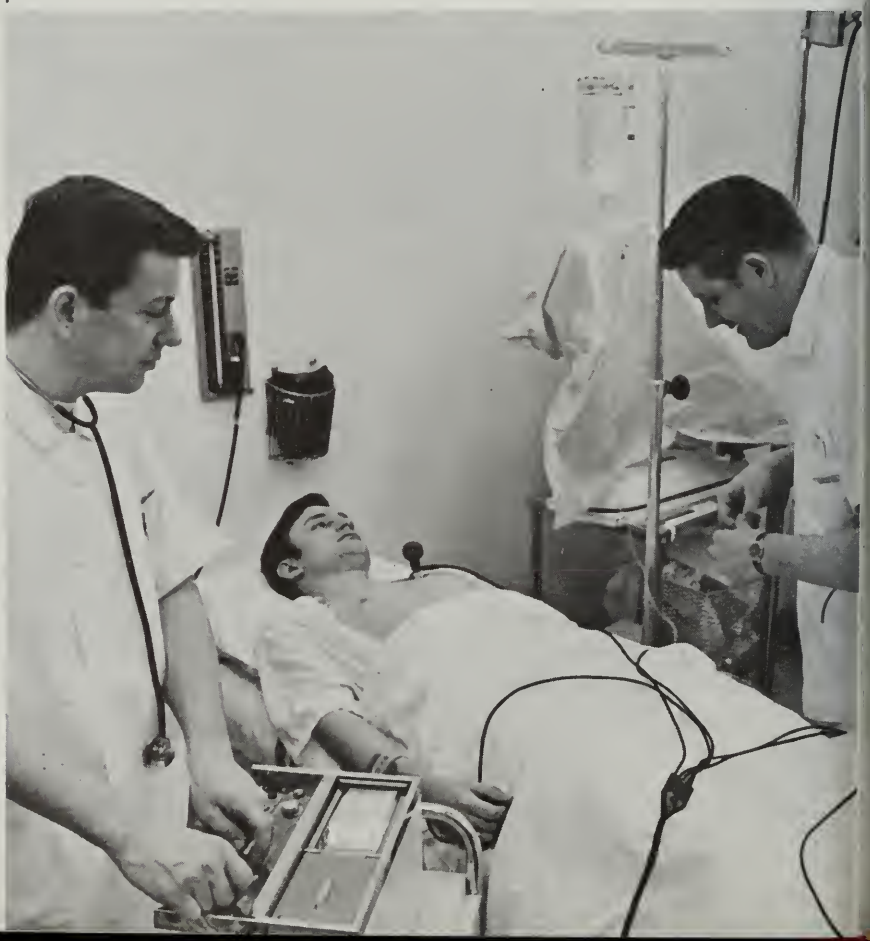
The outpatient services comprise the public clinics, the private patient clinics, the employee health office, and the emergency service. Over 250,000 visits are made each year to these units. Close working relationships between Duke Hospital and other various outside health agencies enhance continued care of the patients.

The clinical faculty of the Duke University School of Medicine forms the medical staff of Duke Hospital. Thus this group not only participates in both undergraduate and graduate medical education but also in active medical practice within the hospital and the private diagnostic clinics. Duke Hospital is approved for internship and residency training by the Council on Medical Education and Hospitals of the American Medical Association and conducts an active educational program involving approximately 340 house staff members. The hospital is fully accredited by the Joint Committee on Accreditation of Hospitals.

Veterans Hospital

The Durham Veterans Administration Hospital is located within walking distance of the School of Medicine. The full-time professional staff are all members of the faculty of Duke University School of Medicine. This 489-bed general hospital provides an opportunity for closely integrated student teaching and house staff training.

During the clinical rotations the students develop skills in technical procedures.



Student Life

Living Accommodations

Housing

Students are responsible for making their own living arrangements. Even though no campus housing is available, suitable quarters can be rented in areas near the Medical Center.

Dining Facilities

Several dining facilities located in and near the Medical Center are available to the students.

In the Duke University Union Building there are two cafeterias offering multiple choice menus and a dining area, the Oak Room, which offers full menus and *à la carte* items.

Student Health Services

Students are treated through the Employee Health Clinic during the day and in the emergency room after 5:00 p.m. They have the opportunity of obtaining additional health coverage through the North Carolina Blue Cross & Blue Shield Association policy made available to

students and employees of the University and Medical Center. Students will be given a complete physical examination at the beginning of the first year, which includes a roentgen examination of the chest and various other laboratory studies. Annual physical examinations thereafter are also required.

Organizations

There are two organizations open to students enrolled in the Physician's Assistant Program. Participation in one of these, the Student Government Society, is mandatory and costs ten dollars per year. In the professional organization, the American Association of Physician's Assistants, participation is on a voluntary basis by both students and graduates. Fees for participation in the latter organization are twelve dollars per year for students and twenty dollars per year for graduates.

The Student Government Society officers include the president, a secretary, and class presidents and representatives from each class elected by the student body and the individual classes respectively. An executive committee, chaired by the president and composed of the secretary and the class presidents, serves as the official student voice of the Physician's Assistant Program. The responsibilities of the Student Government Society include the ability to represent student views and express opinions on various subjects to the faculty and administration; to act as a service organization for the student body, responsible for student services deemed feasible by the organization and approved by the Physician's Assistant Program administrators; and to assist in the orientation of the freshmen students.

A major responsibility of the Student Government Society is the preservation of the honor code which is a proud tradition of the Duke University Medical Center. The prevailing opinion has been that if a student cannot withstand the relatively minor stresses and temptations arising during his training, he can never be expected to act with integrity under the much greater demands and responsibilities he will encounter as a physician's assistant. Thus, a strong honor system exists to develop and maintain honesty during the course of training. Each student, on or before entering the Physician's Assistant Program, is required to sign a statement expressing his understanding and familiarity with the honor code and his willingness to abide by its provisions. The Student Government Society maintains an Honor Council, chaired by the president and comprised of the secretary and the class presidents and representatives to try students accused of any infringements of the honor code. The program administration serves to recommend the disposition of a student found guilty by the honor council.

The professional organization, incorporated in 1968 as the American Association of Physician's Assistants (AAPA), provides an active professional program with the cooperation of the students and graduates directed toward the objectives of program development, professional ethics and guidelines, and continuing education.

Motor Vehicle Registration

Each motor vehicle operated on the Duke University campuses by students must be registered at 08 Social Science Building within five calendar days after operation on the campus begins, and thereafter must display the proper registration emblem.

Students must pay an annual parking fee of $30.00 for each motor vehicle and $10.00 for each motorcycle, motorbike, or motor scooter.

To register a vehicle, the student must present the following documents: (1) a state vehicle registration certificate; (2) a valid driver's license, and (3) satisfactory evidence of automobile liability insurance as required by North Carolina law—$10,000 per person, $20,000 per accident for personal injuries and $5,000 property damage.

Parking, traffic, and safety regulations will be given each student who registers his vehicle. Students are expected to abide by these regulations.

The emphasis of the curriculum is in directing the graduate to assist the physicians in their daily patient care.



Financial Information

Tuition and Fees

At the present time students of the Physician's Assistant Program are classified as Duke University Special Students and are therefore not required to pay tuition. The only required fees are the five dollar application fee, a five dollar registration fee payable at the beginning of each year, and a ten dollar membership fee payable each year for participation in the Student Government Society. The application fee must accompany the application forms, and the other fees will be collected on the day of registration. An additional fee of ten dollars will be charged to students who do not register at the designated time.

Student Expenses

The following table represents an estimate of a student's necessary expenses for the twelve month academic year. Allowances for clothing, travel, and other miscellaneous expenses must be added to this estimate. These of course will vary considerably depending on the needs and tastes of the individual.

Room—single	$ 720
Room—married	1,450

Board (per adult)	600
Books	100
Equipment	150
Uniforms	30

Financial Assistance

The Physician's Assistant Program is approved for veterans educational benefits (G. I. Bill) for those who are eligible.

Limited funds are available for student support and are granted on the basis of need as determined by application to the Director. Applications for financial assistance will be considered only after registration. Students should not anticipate financial assistance by the program as a means of support.

Employment Opportunities

Part-time employment for students is available in many areas of the Medical Center. Employment that can net the student about one hundred dollars per month and yet not jeopardize his education is generally available. Students must comply with the academic schedule and are prohibited from working more than fifteen hours per week.

Employment for students' wives is available in or near the University. Typical salaries are three to five hundred dollars per month for secretaries, practical nurses, and other technically trained people; and four to seven hundred dollars per month for registered nurses, medical technologists, and other professionally trained people.

Admission

Admission Requirements

New students are admitted for the academic year of school beginning in the fall. Since the enrollment is limited, the Committee on Admissions selects students who, in its judgment, are best qualified to benefit from the educational advantages which the program offers. Selection is based on the academic record of the candidate, on test scores, and on satisfactory evidence of good character and general fitness. Because of the academic demands on the student during the two year training program, certain prerequisites have been established for qualification as a candidate for the program.

Prospective students are urged to broaden their reading and to make the acquaintance of a broad variety of books and magazines. At the same time they should take every opportunity to increase their competence in writing. Those who cannot write simple, clear, grammatical English prose will be progressively at a serious disadvantage in the competition for admission and also in the general work of the program. Careful attention to correct English in all correspondence and on application blanks cannot be too seriously stressed for candidates for admission.

Prerequisites

1. A high school diploma or its equivalent by examination. Preference is given to candidates with two or more years of successfully completed

general college course work. All applicants should have some science courses in their academic background.

2. Previous experience in the health field with at least one year involving extensive direct patient contact.

3. Three character references and personal evaluations. These should be completed on the forms provided by the Committee on Admissions. One form should be completed by a physician with whom the applicant has worked, one by a commanding officer or supervisor, and one by an unrelated acquaintance of five years or more.

4. Completion of the Scholastic Aptitude Test and the Math Achievement Test Level I of the College Entrance Examination Board. These tests are given on the first Saturday of March, May, November, and December; and on the second Saturday of January and July. Arrangements for taking these examinations can be made through the Educational Testing Service. Applicants from the west, southwest, and all foreign countries should address their correspondence to: College Entrance Examination Boards, P. O. Box 1025, Berkeley, California 94701. Applicants from the east, midwest, and south should address their correspondence to: College Entrance Examination Boards, P. O. Box 592, Princeton, New Jersey, 08540. Information can also be obtained through local high schools, military education offices, and local Educational Testing Service offices in many cities. When taking the examinations you have to fill in the college that is to receive the test results. Our code number is 5174. *Do not fail to take that number with you to the examination.*

Candidates should allow at least three weeks for the receipt of requested information and applications must be received by the testing center one month prior to the date of the exam. Applicants should therefore begin preparation for the examinations at least two months prior to the examination date. Because final student selection begins in April all applicants must take their examinations by March of the year they wish to begin.

It should be noted that the Scholastic Aptitude Test given in the mornings consists of both verbal and math sections. The math section of the Scholastic Aptitude Test should not be confused with the Math Achievement Test Level One which is given in the afternoon. This latter test is also required.

5. Application files must be complete by April 15 of the year for which admission is requested. To be considered complete they must contain the following:

a. A completed application form including a photograph.
b. Transcript records from high school, college, military schools, and all other academic training.

c. Three completed personal evaluation forms.
d. Appropriate College Entrance Examination Board test results.

Application for Admission

Application forms may be obtained by writing to the Physician's Assistant Program, Committee on Admissions, P. O. Box CHS 2914, Duke University Medical Center, Durham, North Carolina 27706. Please do not send requests before July 1. Formal applications will be accepted by the committee between July 1 and April 1 of the following year.

Selection

Selection is made between April 1 and July 1 for the students entering the following September. The data on each candidate are carefully screened by the Committee on Admissions and a personal interview will be arranged at Duke University for those with satisfactory credentials. Final notification will be made by July 1 as to whether or not an applicant has been accepted for admission.

During his training the physician's assistant is taught how to do complete patient evaluations by collection of historical and physical data.



Registration and Regulations

Registration and Orientation

Students will be registered on the first day of classes. Registration begins promptly at 8:30 a.m. Students who report at a later time will be required to pay a $10.00 late registration fee. In no case will registration be considered after the end of the first week of classes. Orientation will immediately follow registration procedures and will last the remainder of the day. During orientation, each student is required to undergo a physical examination under the program's direction. Students whose condition needs further observation may be admitted tentatively, but must cancel their applications if findings prove them physically unable to pursue the program.

Identification Cards

On registration day each student is issued an identification card which is to be carried at all times. The card secures library privileges, health services, entry into certain athletic events, and admission to other functions entitled by special student status. A student is expected to present the card at the request of any authorized official of the University.

These cards are not transferable and their loss should be reported immediately to the Program Director's office. The cost of a new identification card is $5.00.

An over-all indication of the quality of student performance is provided by assigning quality points per semester hours of a course as follows:

Grade	Quality Points
A+	4.0
A	4.0
A—	3.7
B+	3.3
B	3.0
B—	2.7
C+	2.3
Grade	Quality Points
C	2.0
C—	1.7
D+	1.3
D	1.0
D—	1.0
F	0.0

The course grade is not based on examinations alone but also on the quality of the student's classroom work and written work throughout the didactic phases of the program.

A—Excellent. *A* indicates achievement of distinction. It involves excellence in several, if not all, of the following aspects of the work: completeness and accuracy of knowledge, intelligent use of knowledge, independence of work, and originality.

B—Good. *B* indicates general achievement superior to the acceptable standard defined as *C*. It involves excellence in some aspects of the work, as indicated in the definition of *A*.

C—Average. *C* indicates the acceptable standard for graduation from this program. It involves such quality and quantity of work as may fairly be expected of a student of normal ability who gives to the course a reasonable amount of time, effort, and attention. Such acceptable standards should include the following factors: familiarity with the content of the course, familiarity with the methods of study of the course, full participation in the work of the course, and the ability to write about the subject in intelligible English.

D—Lowest passing grade. *D* indicates work which falls below the acceptable standard defined as *C* but which is of sufficient quality and quantity to be counted in the hours of certification if balanced by superior work in other courses.

F—Failure. *F* indicates failure that may not be made up except by

repeating the course. All failures in the preclinical section must be made up before the student is eligible to participate in the clinical section.

Students with failing grades in any of the preclinical courses will be ineligible to continue in the clinical portion until the failures have been made up.

Students must have a quality point ratio of at least 2.0 before starting the clinical portion of the Physician's Assistant Program.

Grading

Final grades of performance in academic work are sent to students at the end of each phase of the preclinical portion and after each clinical rotation while enrolled in the program. Students will be notified of any unsatisfactory performance. Progress through each phase of the program is monitored by the faculty in charge. Further evaluations are based on written and oral examinations. The student is certified as a physician's assistant upon successful completion of all preclinical and clinical material along with passing scores on the written, oral, and practical board examinations at the end of the twenty-four month period.

Incomplete Work

If because of illness or other emergency a student's work in a course is incomplete, he may receive an *I* for the course instead of a final grade. Incomplete courses must be completed before the close of the succeeding phase; otherwise, the *I* is converted to an *F* and the course must be retaken before the student can receive credit for it. In case a student whose work is incomplete is also absent from the final examination, an *X* is received for the course.

Class Attendance Regulations

The attendance regulations specifically place the responsibility for class attendance upon the individual student. A student is expected to attend his classes regularly and punctually. It should be recognized that one of the most vital aspects of a residential college experience is attendance in the classroom, and that the value of this academic experience cannot be fully measured by testing procedures alone. The members of the student body are considered sufficiently mature to appreciate the necessity of regular attendance, to self-discipline essential for such performances, and, conversely, to recognize and accept the consequences of failure to attend. Instructors are privileged to refer to the Program Director for appropriate action for any student who in their opinion is causing his work or that of the class to suffer because of absences or latenesses.

Absences from classes due to illness will be excused when certified by a proper medical official. Absences from classes due to authorized repre-

sentation of the University may be excused. Officials in charge of groups representing the University are required to submit names of those persons to be excused to the program director's office forty-eight hours in advance of the hour when their absences are to commence.

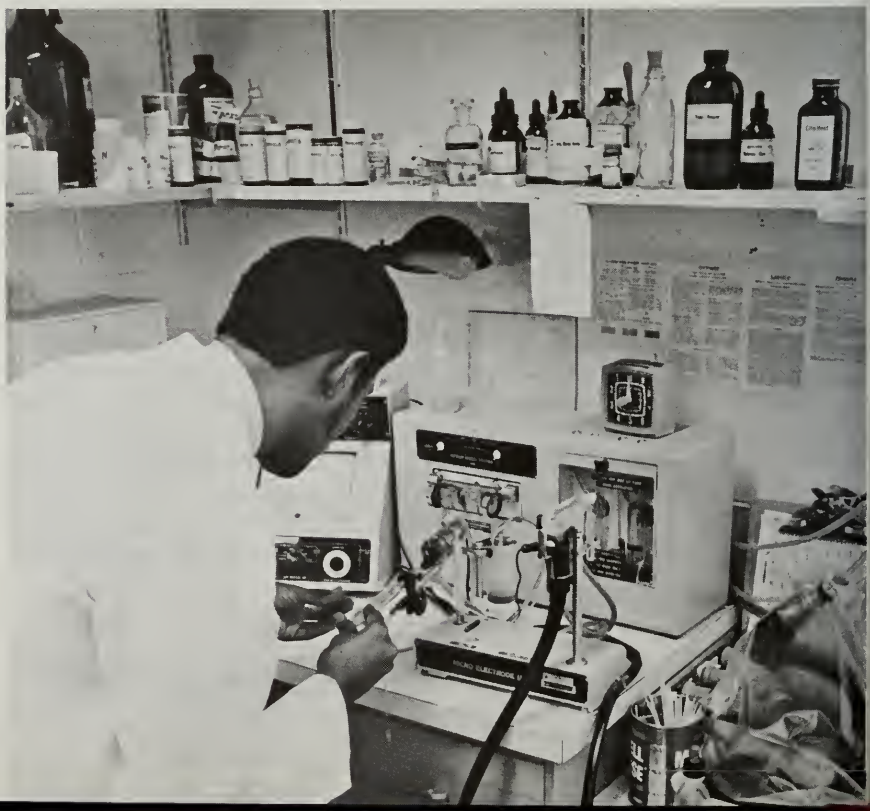
Nonacademic Regulations

Accepting admission to the Physician's Assistant Program obligates the student to all Duke University regulations. The regulations, rights, and responsibilities of the student are incorporated in a student handbook issued to the students at the time of registration.

Certification

Student's progress through the course is carefully monitored by the faculty. Grades, based on class participation and oral and written examinations, are continually posted and updated during the preclinical curriculum. During the clinical experience the students are evaluated by the faculty and staff in charge at the completion of their rotations. The final week of the twenty-four month program is set aside to allow the student the opportunity of demonstrating his abilities in oral, written, and practical evaluations. Upon satisfactory completion of the requirements, the student is then certified by Duke University as a physician's assistant.

A graduate physician's assistant participates extensively in the evaluation of newborns as well as participation in therapeutic procedures.



Opportunities for the Graduate

Skills and Functions

The training in the development of specific skills which the Physician's Assistant Program offers its students is directed toward making them stable and productive members of the health team and thereby provide opportunities for a career and for future growth in many health-related areas.

Graduates of the program can be employed by a physician, or by a group of physicians. Within the Duke University Medical Center, graduates are needed in research laboratories, clinical areas, diagnostic laboratories and special areas such as the renal center and the hyperbaric chamber. Outside the Medical Center there are infinite opportunities for employment by community based physicians and clinics. In any case the physician's assistants clinical endeavors will always be under the supervision of a physician.

Employment Opportunities

The need for the physician's assistant can be measured and evaluated in many ways, but perhaps one of the most significant ways is in viewing the employment opportunities. The available positions outnumber the

graduates by over five-to-one. Almost daily, requests for physician's assistants from all over the country are received; however, as with requests for physicians, many of these must go unfilled. Even though the primary objective of the program is to fulfill the needs of the first line community physician, it is easy to realize how every segment of medical practice can function more efficiently by utilizing these intermediate level professional assistants.

Salary Range

At the time of the program's inception, the question of salary range was raised. It was felt that a professional person of this caliber would command an economically attractive income which in itself would be capable of encouraging career stability. However, two related items were quickly realized—if the income of the physician's assistant was too far out of line with that of the nurse, hard feelings could possibly arise, and in order to command a respectable income, the physician's assistant would have to prove his worth. The fact that the physician's assistant would be on a schedule closely resembling that of a physician was also taken into account. On the basis of these and other factors it was felt that a justifiable starting salary would be in the range of eight to ten thousand dollars a year. Currently, the graduates employed in the Duke Medical Center receive a starting salary in the range of eight thousand dollars a year and the average starting salary offered by physicians outside the Medical Center is in the range of ten thousand dollars a year. The ultimate income of a physician's assistant will undoubtedly be based on his actual value to his employer-physician.

Utilization and Role

One of the most frequent questions raised about the utilization of the graduate is whether he should be employed by one or more than one physician, by an institution, or both. In the judgement of the administration, every physician's assistant shoud be employed by and be responsible to *a* physician. Such an assistant can be used by more than one physician, but one physician's assistant per two physicians is felt to be the maximum ratio by all who have been instrumental in the training program to date. The reasons for this are many but are based primarily on two factors—the need for identification of the physician's assistant with a physician, and the realization of the responsibility required on the part of the physician toward the physician's assistant. To be sure, many needs could be fulfilled by using this type of assistant exclusively in a hospital setting, but such a utilization must include a bond of responsibility between the physician's assistant and his employer-physician.

Courses of Instruction

Preclinical Courses

PA 101. *History, Philosophy, and Ethics of Medicine.* 1 semester hour. *Howard*
PA 103. *Basic Clinical Laboratory.* 2 semester hours. *McQueary*
PA 105. *Medical Terminology.* 1 semester hour. *Kernodle*
PA 107. *Inorganic Chemistry.* 1 semester hour. *Spooner*
PA 109. *Introduction to Animal Experimentation.* 1 semester hour. *Vakilzadeh*
PA 131. *Bacteriology.* 1 semester hour. *Osterhout*
PA 133. *Anatomy and Physiology.* 4 semester hours. *Staff*
PA 135. *Essentials of Chemical Biology.* 3 semester hours. *Spooner*
PA 137. *Clinical Medicine.* 6 semester hours. *K. Andreoli and Staff*
PA 139. *Pharmacology.* 2 semester hours. *Staff*
PA 141. *Physical Evaluation.* 1 semester hour. *Staff*
PA 143. *Clinical Chemistry.* 2 semester hours. *Staff*
PA 145. *Diagnostic Procedures.* 2 semester hours. *McQueary and Staff*
PA 147. *Animal Surgery.* 2 semester hours. *LeMay and Staff*
PA 181. *Electrocardiography.* 1 semester hour. *K. Andreoli*
PA 183. *Introductory Radiology.* 1 semester hour. *T. Thompson*
PA 185. *Community Health.* 1 semester hour. *Staff*
PA 187. *Basic Principles of Data Processing.* 1 semester hour. *C. Smith*
PA 189. *Patient Evaluation.* 2 semester hours. *McFarland*
PA 191. *Medical Instrumentation.* 1 semester hour. *Sims*

Required Clinical Rotations

Students participating in medicine or surgery must take *one* inpatient and *one* outpatient rotation plus all other rotations listed in this group.

PA 201. *Medical Inpatient Service.* 6 semester hours. *Chief Medical Resident*
PA 231. *Surgical Inpatient Service.* 6 semester hours. *Surgical Resident*
PA 203. *Medical Outpatient Clinic and Emergency Room.* 6 semester hours. *Bogdonoff*
PA 233. *Surgical Outpatient Clinic and Emergency Room.* 6 semester hours. *Peete*
PA 205. *Pulmonary Function and Inhalation Therapy.* 3 semester hours. *Ramirez-Rivera*
PA 207. *Health Administration.* 3 semester hours. *Howard*
PA 209. *Faculty Health Clinic.* 3 semester hours. *McFarland*
PA 211. *Library Research.* 1 semester hour. *Staff*
PA 213. *Outside Physician.* 3 semester hours. *Clinical Staff*

Elective Clinical Rotations

Students can choose any three elective rotations. During the preclinical year detailed accounts of the content of each rotation are made available to the students. After counseling with the students, schedules for the clinical experience are developed.

Department of Medicine

PA 311. *Allergy and Respiratory Disease.* 6 semester hours. *Sieker*
PA 312. *Cardiology.* 6 semester hours. *Ruskin*
PA 313. *Cardiovascular Laboratory.* 6 semester hours. *McIntosh*
PA 314. *Endocrinology.* 6 semester hours. *Lebovitz*
PA 315. *Gastroenterology.* 6 semester hours. *Tyor*
PA 316. *Hematology.* 6 semester hours. *Silberman*
PA 317. *Hyperbaric Medicine.* 6 semester hours. *Saltzman*
PA 318. *Lincoln Hospital.* 6 semester hours. *Johnson*
PA 319. *Nephrology.* 6 semester hours. *Robinson*
PA 320. *Neurology.* 6 semester hours. *Heyman*
PA 321. *Psychosomatic Medicine.* 6 semester hours. *Reckless*
PA 322. *Rheumatology.* 6 semester hours. *Kerby*
PA 323. *Dermatology.* 6 semester hours. *Tindall*

Department of Surgery

PA 411. *Blood Bank.* 6 semester hours. *W. Smith*
PA 412. *General Surgery.* 6 semester hours. *Mauney*
PA 413. *Neurosurgery.* 6 semester hours. *Odom*
PA 414. *Ophthalmology.* 6 semester hours. *Anderson*
PA 415. *Orthopedic Surgery.* 6 semester hours. *Goldner*
PA 416. *Otolaryngology.* 6 semester hours. *Hudson*
PA 417. *Urology.* 6 semester hours. *Glenn*
PA 418. *Plastic Surgery.* 6 semester hours. *Pickerell*

Department of Pediatrics

PA 511. *General Pediatrics.* 6 semester hours. *Katz*
PA 512. *Newborn Nursery.* 6 semester hours. *Brumley*
PA 513. *Clinical Research Unit.* 6 semester hours. *Sidbury*

Summer Session

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General Information

The Summer Session at Duke University makes available to Duke students, to students from other universities and colleges, to teachers in elementary and secondary schools, and to other special students a notable program of instruction in many fields of knowledge, both academic and professional.

Course programs offered during the summer are designed to meet special and particular needs as well as the more conventional requirements leading to specific degrees.

Postdoctoral research scholars may find the regular Summer Session courses useful for further study. The library facilities and the various laboratories may be of value for postdoctoral residents.

Graduate students who have been admitted to the Graduate School to study for the Master of Arts, Master of Education, and Master of Arts in Teaching degrees will find courses arranged in sequence from summer to summer to meet their requirements.

Teachers from elementary and secondary schools who desire to earn credits toward the renewal of their certificates and who are interested in further teacher training in subject content and method may enroll in senior-graduate courses as special or unclassified students.

Undergraduates of Duke University who desire to accelerate their programs may complete the work for a degree in three years by attending two or more Summer Sessions.

Undergraduates from other colleges and universities may enjoy the

special advantages of summer instruction at Duke and transfer earned credits to their own institutions.

Graduates of accredited high schools, both men and women, who have been admitted to the freshmen class of Duke University may begin their work in the Summer Session.

While the summer course program meets in many departments the needs of degree candidates, it goes beyond these limits in presenting also courses of wide general interest and, in addition, special non-credit lectures, conferences, institutes, and workshops.

Duke University's ample and modern research facilities will be available during the summer to all properly qualified students. It is the hope of the University, of the summer faculty, and of the administrative officers that former students and new students will find increasing values in each summer spent at Duke.



Courses of Study and Requirements for Degrees

Undergraduate Study

Students in the undergraduate colleges of Duke University who desire to enrich or accelerate their academic programs will find the summer offerings of interest. Special courses are provided which are not otherwise available to undergraduates; election of the usual course offerings may relieve an overload during the fall or spring terms. Summer programs enable some students to attain provisional graduate status in the senior year or to graduate early.

By attending both terms of the Summer Session it is possible for a student to elect as many as four courses and earn up to 12 s.h. credit. Instruction will be offered in the summer of 1969 in most departments and colleges. Specific requirements for degrees offered in the undergraduate colleges may be obtained from the regular *Bulletin of Undergraduate Instruction.*

Divinity School Studies

The degrees of Master of Divinity, Master of Theology, and Master of Religious Education are administered by the faculty of the Divinity

School. A limited number of courses carrying credits toward these degrees is listed herein under the heading of Divinity School. Persons desiring credit toward one of these degrees must be regularly admitted to the Divinity School, and all courses listed for Divinity School credit must be registered and approved in the office of the Divinity School.

Graduate Study

Summer Sessions offer an excellent opportunity to advance or complete programs of graduate study already undertaken, to begin study toward a graduate degree at Duke University, to acquire graduate training useful in professional advancement, or to study for personal satisfaction. The several departments offer a variety of graduate courses, as listed in later pages, given by members of the Duke faculty and visiting professors. Especially full programs are provided in Botany, Education, English, History, Psychology, Sociology, and Zoology.

Postdoctoral Research

Scholars engaged in postdoctoral research find it advantageous and sometimes essential to use in summer the resources of the Duke University libraries. The University welcomes these visitors and makes available to them the living accommodations of the dormitories and the dining halls during the Summer Session, June 10 to August 23.

The Ph.D. and Ed.D. Degrees

Study for the Ph.D. Degree. Students who are interested in working toward a Ph.D. degree should note in detail the requirements as outlined in the *Bulletin* of the Graduate School. The prospective Ph.D. candidate who enters with the A.B. or B.S. degree must plan to spend in residence a *minimum* of two academic years; if he enters with the A.M., his *minimum* residence is one academic year.

Study for the Ed.D. Degree. Students who are interested in working toward the Ed.D. degree or for advanced certificates for principals and supervisors should consult the detailed statement in the *Bulletin of the Graduate School.* Requests for specific information regarding residence and programs for the Ed.D. degree should be sent to the Director of Graduate Studies, Department of Education.

The Master's Degrees

Candidacy. To be considered as a candidate for a Master's degree (A.M., M.S., M.Ed., M.A.T., M.H.A.), the graduate student must (1)

have made passing grades in the first 12 units of course work, (2) have made a grade of *G* or *E* on at least 3 units of this work, and (3) have received the approval of the major department (or in the case of the M.A.T., of the supervisory committee).

Residence Requirements. Candidates for all Master's degrees must spend, as a *minimum,* one full academic year, or its equivalent in Summer Session terms, in residence at Duke University. Those who wish to complete their degrees wholly in the Summer Session must be in residence for five terms. Depending upon the degree program pursued and the individual student himself, additional time frequently proves necessary.

Transfer of Graduate Credits. Under certain circumstances a maximum credit of 6 units may be allowed for graduate courses completed elsewhere. Units from other institutions for such cases will normally be transferred only if the student has received for them a grade of B (or its equivalent) or better. In any case, the transfer of graduate credit does not reduce the required minimum registration for a master's degree at Duke. In planning a master's program, a student who wishes to transfer up to six units into his program should allow for registering at Duke for units equivalent to the number he is transferring.

With the approval of both the student's major department and the Dean of the Graduate School, a student who is granted such transfer credit may be permitted to register for as much as 12 units of thesis research instead of the usual 6 units, or he may be permitted to fill out his schedule with as much as 6 units of further undergraduate training or 6 units of required language courses on the undergraduate level. In no case will credit be allowed for extension or correspondence courses.

Time Limits for Completion of Master's Degrees. The Master's degree candidate who is in residence for consecutive academic years should complete all requirements for the degree *within two calendar years* from the date of his first registration in the Graduate School. *Any candidate* must complete all requirements *within six calendar years of his first registration.*

To be awarded a degree in June the student must have completed all requirements, including the recording of transfer credit, by the last day of the final examination period. If a thesis is one of the requirements, it must be submitted to the Graduate Office by May 1. Candidates for degrees in the Graduate School desiring to have their degrees conferred on September 1, must have completed all requirements as of the final day of the Duke University Summer Session. A candidate completing degree requirements after that date will have his degree officially conferred at the following June Graduation Exercises. (Transfer of credit for work completed at other universities must be recorded by September 15.)

The Thesis. The thesis should demonstrate the student's ability to col-

lect, arrange, interpret, and report pertinent material on his special research problem. Although a publishable document is not required, the thesis must be written in an acceptable style and should exhibit the student's competence in scholarly procedures. Requirements of form are set forth in the Duke University *Manual of Style for Theses and Dissertations,* revised 1961, obtainable at the Duke University Book Store.

Master of Arts

The Master of Arts degree may be earned either with or without presentation of a thesis. Whether or not a student writes a thesis, however, certain general requirements must be met. If the Master's degree requirements are not specified in the departmental heading of *Bulletin of the Graduate School,* a prospective student should inquire directly from the appropriate Director of Graduate Studies.

Prerequisites. As prerequisites to graduate study in his major subject, the student must have completed a *minimum* of 24 semester hours—12 semester hours of approved college courses in that subject, and 12 additional semester hours in that subject or in related work. Since some departments require more than 12 semester hours, the student should read carefully the special requirements listed by his major department, which are included as headnotes to the course offerings in this bulletin.

Langauge Requirements. The candidate for the A.M. degree must have a reading knowledge of at least one ancient or modern foreign language. (The several departments reserve the right to specify which foreign languages are acceptable.)

To prevent delay in meeting this requirement, students whose programs call for mastery of French, German, Russian, or Spanish are urged to take the appropriate ETS Graduate School Foreign Language test prior to registration. It should be noted, however, that at the time of the final examination in a master's program or of the preliminary examination in a doctoral program, language certificates more than six calendar years old will not be accepted toward fulfilling the language requirement.

Language requirements may be met before or after first registration in the following ways:

Before First Registration. 1. *By ETS Scores.* Educational Testing Service Graduate School Foreign Languages tests in French, German, Russian, and Spanish are offered to undergraduate and graduate students at many centers including Duke University Counseling Center on nationally uniform dates.

2. *By Transcript.* With the permission of the Dean of the Graduate School and of the chairman of his program committee or of the Director of Graduate Studies, the *doctoral* student may file a transcript or other certification as evidence of having passed a comparable examination,

other than an ETS test, at another graduate institution. The limitations are that (1) only one of the two doctoral requirements may be met in this way, (2) the other institution offers a doctoral program in the student's major and that the examination would have met a doctoral requirement there, and (3) the examination was passed no more than five years before first registration here.

After First Registration. 1. Students wishing to be examined in French, German, or Russian take the ETS test. 2. Students who wish to be examined in Spanish take the ETS test if they first registered in September 1967 or thereafter. If they registered before that date, they take either the ETS test or the locally prepared reading test. 3. Upon request, a locally-prepared reading test will be administered in Italian.

Reading examinations in other languages must be individually arranged, after approval of the language by the Dean. Each ETS examination requires a fee of $8. The student who requires a re-examination in the locally prepared reading examination at scheduled times will be charged $5 for each re-examination; if special times are necessary, the fee will be $10. Examinations at special times cannot be offered in French and Spanish.

Major and Minor Subjects. In his graduate work the student must present acceptable grades for a minimum of 24 units of graduate courses. Of these, at least 12 units must be in the major subject. A minimum of 6 units must be in a minor subject or related fields which are approved by his major department. The remaining 6 units of the required 24 may be taken in either the major or minor department, or in another approved by the major department and by the Dean of the Gradaute School. The nature of the additional 6 units for which he must register depends on whether he is enrolled in a thesis or non-thesis program, i.e., these last 6 units are earned either with successful submission of the thesis or with such other courses or academic exercises as are approved by the student's department. (See options below.) His earned credit for the degree totals a *minimum* of 30 units.

Options for Completing the Program With Thesis

Preparing the Thesis. All basic requirements for preparing the thesis are described in the *Manual of Style for Theses and Dissertations,* revised 1961, obtained at the Duke University Book Store, West Campus. The quality of paper, form, and binding are prescribed in the *Manual.*

Submitting the Thesis. Four typewritten copies of the thesis bound in snap binders secured through the Graduate School Office must be submitted in approved form to the Dean of the Graduate School on or before May 1 for a June degree or August 15 for a September degree and at least one week before the scheduled date of the student's examination. The copies will then be distributed by the student to the several members of

the examining committee. Two copies for the Library and one for the adviser will be bound by the Ruzicka Bindery, fee $5.00 a volume. The student will state whether or not he wishes more than three so bound.

Without Thesis

The options with which a Master of Arts degree may be completed without presentation of a thesis are determined by the individual departments. Normally a student's committee makes its decision on his degree program after he has completed at least 9 units of graded course work. Beyond the 24 units required in major and minor course work, 6 units may be earned either with additional course work or with other equivalent academic exercises approved by the student's department and committee. Such academic exercises might include an additional 3 units of graded course work supplemented by, e.g., the following: (1) passing an oral examination on a 3-5-page research prospectus plus a substantial bibliography on a topic within the student's major field, or, (2) successful submission to the committee of two carefully revised term papers, preferably written originally for different instructors and originally earning a grade of G or higher. In any case, the student's total minimum registration will be for 30 units of work, followed by a final examination (see below).

The Examining Committee and the Examination. The instructor who directs the student's program appoints an examining committee composed of himself and two other members of the Graduate Faculty, one of whom must be from a department other than that of the major. If the student has been permitted to take related work *within* the major department, the third member may represent the minor field within the department. This committee is submitted for approval to the Dean of the Graduate School at least one week preceding the final examination.

The student's committee administers the examination and certifies the student's pass or failure by signing the card provided for this purpose by the Graduate Office. This card is used to indicate completion of all requirements for the degree. If a thesis is presented, the committee also signs all copies of the thesis, and the candidate then returns the original, the first two carbon copies, and any other copies he wishes bound by Ruzicka, to the Dean of the Graduate School, who deposits them in the University Library.

Filing the Intention to Graduate. On or *before March 1 for a June degree* or on or *before August 1 for a September degree,* the student must file with the Dean of the Graduate School, on the official form, a declaration of intention to graduate. If degree requirements have been met before the deadlines above, the intention to graduate must be filed one month before the final examination. The declaration of intention gives the title of the thesis or other academic exercises on which the degree candidate will be examined. The declaration must have the ap

proval of the Director of Graduate Studies in the major department, and of the student's committee chairman.

Master of Science

The degree of Master of Science is offered in the three fields of Engineering—Civil, Electrical, and Mechanical—and in Forestry.

Prerequisites—Engineering. As prerequisites to this degree, the student must have earned a Bachelor's degree from an accredited engineering college and have completed a minimum of 12 semester hours of work in the major field.

Prerequisites—Forestry. As prerequisite to this degree, the student must have earned a Bachelor's degree which represents an undergraduate program in forestry or an allied field.

Language Rquirements. For the Master of Science degree no foreign language is required.

Major and Minor Subjects—Engineering. The work for the Master of Science degree is designed to provide a broad foundation in the fields of civil, electrical, and mechanical engineering. The student must present acceptable grades for a minimum of 24 units of graduate courses: at least 12 in course work in his major area of concentration in engineering (not necessarily confined to the offerings of the engineering department in which the student is registered); a minimum of 6 units in a minor subject outside of engineering which lends broad support to his program (usually in mathematical or natural sciences); and the remaining 6 of the 24-unit course requirement in either the major or minor subject, or in an area approved by the major department and by the Dean of the School of Engineering. The nature of the additional 6 units for which he must register depends on whether he is enrolled in a thesis or non-thesis program, i.e., these last 6 units are earned either with successful submission of the thesis or with such other courses or academic exercises as are approved by the student's department. His earned credit for the degree totals a minimum of 30 units.

Major and Minor Subjects—Forestry. The work for the Master of Science degree is designed to provide a basic foundation in a fundamental area of forestry or in a field closely allied with forestry. A minimum of 30 units of credit is required for the degrees of which 24 units must be in formal courses. Specific course requirements call for a minimum of 12 units in a major field of specialization and 6 units in a minor area of concentration. The major and minor fields are determined without regard to departmental divisions of the University if the interdisciplinary nature of the area of specialization makes such a program of study advisable. The specific program of study and the nature of the completion exercise are developed by the chairman of the student's examining committee, subject to the approval of the Director of Graduate Studies in Forestry and the Dean of the Graduate School.

Thesis and Examination. The regulations and options for completing the program and the provisions for examination and an examining committee are the same as those for the Master of Arts degree. (See pp. 6-9.)

Master of Education

Prerequisites. Before a student is admitted to graduate study for this degree, he should have completed, on the undergraduate level, a minimum of 18 semester hours of approved work in Education.

Before the degree is conferred the student must have had one year of actual teaching experience, or have met certification requirements by supervised student teaching in an accredited school. Such supervised student teaching may be at either the undergraduate or the graduate level.

The Thesis. The Master of Education degree may be earned either with or without a thesis.

Without thesis. The required work includes a departmental major (Administration, Counseling, Elementary Education, Secondary Education, or Teaching the Emotionally Disturbed) of at least 12 units, and a minor of at least 6 units outside the Department of Education. The remaining 12 units are elective within the area of Education and the minor field, but require the approval of the student's major adviser and the Director of Graduate Studies.

Toward the end of his residence the student must pass a comprehensive examination on his departmental major. This examination shall be prepared and conducted by the instructors of the student's major as designated by the Director of Graduate Studies of the Department of Education. Request to take this examination should be made to the Director of Graduate Studies at least two weeks before the date on which the examination is to be conducted.

With thesis. Students who elect this plan are permitted to substitute a thesis for 6 units of the required course work. The thesis subject must be approved by the instructor who is to direct it, and by the Director of Graduate Studies.

In addition to the thesis, the student must present at least 24 units of course credit. Of these, 12 units must be taken in the student's departmental major. Six units, constituting a minor, must be taken outside of the Department of Education. The remaining 6 units are elective within the area of Education and the minor field, but require the approval of the student's major adviser and the Director of Graduate Studies.

The regulations governing the thesis are the same as those for the Master of Arts degree. (See pp. 6-9.)

Recommendation for Teacher Certification. Elementary school teachers who already hold certificates and who desire the recommendation of Duke University for a graduate teaching certificate must include in their Master's program a minimum of 12 semester hours in subjects

ordinarily taught in elementary school and 12 semester hours in education courses designed to improve them as elementary school teachers.

Master of Arts in Teaching

Prerequisites. The degree of Master of Arts in Teaching is designed for teachers already in service and for recent graduates of liberal arts colleges who wish to teach in a public school, private school, or junior college.

A student should normally have completed a minimum of 12 semester hours in his proposed major subject and an additional 12 semester hours in that or related subjects. Should a student wish to undertake a graduate major different from his undergraduate major, the prerequisites may be modified upon the recommendation of the student's committee and the approval of the Dean of the Graduate School.

Programs for the Degree. Either of two programs may be arranged, in consultation with the student's committee. In both programs a *minimum* of 30 units is required.

1. A major in Education of 18 to 24 units and 12 to 18 units in non-education courses (for students seeking certification). A total of 36 units.
2. A major in non-education courses of 18 to 24 units and 6 to 12 units in Education (for students already certified). A total of 30 units.

The non-education courses are to be taken in one or more subjects ordinarily taught in the secondary schools. The amount and distribution of this work will be determined by the needs of the individual student. A major in Biological Sciences or in Physical Sciences is possible in this program. Teachers who have already completed certification requirements must major in a teaching field in their Master of Arts in Teaching program. Students who have not completed certification requirements must major in education.

The Master of Arts in Teaching may be earned with or without the presentation of a thesis. If a student, in consultation with his committee, elects to present a thesis, 6 units of the total of 30 units required will be allotted to thesis research. He will then be required to complete 24 units of course credits. The regulations governing the thesis are the same as those for the A.M. *with thesis* (see p. 7). Candidates for the Master of Arts in Teaching who have not had teaching experience are required to take Education 215-216, or 315-316, in which case a minimum of 36 units is required.

The Committee. Each candidate for the degree will be assigned a committee, appointed by the Director of Graduate Studies in the major department or area. This committee will consist of three members, at least one of whom will be from the Department of Education, and at least one from another department. The chairman of the committee will normally be chosen from the department of the major.

Recommendation for Teacher Certification. Secondary school teachers who already hold certificates and desire the recommendation of Duke University for graduate teaching certificates must include in their Master's program a minimum of 18 semester hours in their teaching fields and 6 semester hours in courses in education designed to improve them as secondary school teachers.

Cooperative Program in Teacher Education. Thirty-five to forty selected graduates of liberal arts colleges who desire to prepare for high-school teaching will be admitted to a special internship program at Duke University. This program is designed to prepare for a teaching career selected college graduates who did not prepare professionally for teacher certification as undergraduates. The Cooperative Program provides, for candidates who are chosen, graduate study in their special fields, professional courses, and carefully supervised observation and teaching experience. One who completes the program successfully can achieve within a period of fifteen months a year of teaching experience, a Master of Arts in Teaching degree, and full certification as a teacher.

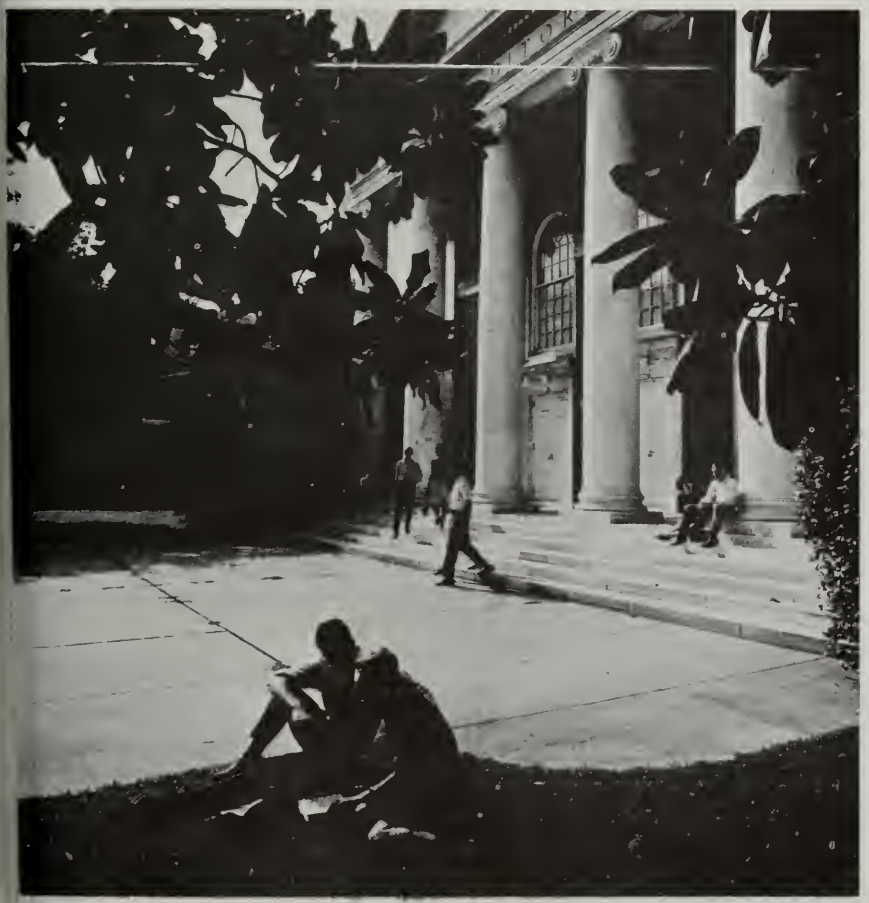
Candidates will begin the program at the opening of the Summer Session of 1969 and complete it in August of 1970. They will spend the summer preceding and the summer following the year of teaching in residence at the University. During the school year 1969-1970 interns will be employed as regular teachers in a cooperating public school system. During this year they will receive full salary and will work under the joint supervision of the cooperating public school and the University. The program will meet training qualifications for the advanced, or graduate, teacher's certificate in many states. Participants in the program are expected to teach for a second year as fully certified teachers in the school in which they complete the internship.

The salary for the year of teaching will, in effect, constitute a substantial award to candidates selected for the program. Interns will benefit from Duke University's special tuition rate for teachers. Applicants will be considered, as are candidates for other awards, on a competitive basis. The best-qualified applicants will be chosen on the basis of undergraduate record, recommendations, and evidence of interest in becoming high-school teachers. Applicants are required to arrange interviews in connection with their applications. Application forms may be secured by addressing a request to the Dean of the Graduate School and should be submitted before February 15, 1969. Details concerning the program can be obtained by writing the Director, Cooperative Program in Teacher Education, Department of Education, Duke University.

Completion of Requirements for Degree on September 1

Candidates for degrees in the Graduate School desiring to have their degrees conferred on September 1, must have completed all requirements

for the degree as of the final day of the Duke University Summer Session. A candidate completing degree requirements after that date will have his degree officially conferred at the following June Graduation Exercises. (Transfer of credit for work completed at other universities must be recorded by September 15.)



Special and Cooperative Programs

Cooperative Programs

The long-standing reciprocal agreement with the University of North Carolina is now effective during the respective Summer Sessions of this University and the University of North Carolina. To take advantage of this arrangement the eligible student, in one or two terms of the Summer Session, registers each term for 3 units of credit at the home institution and 3 units representing the course to be taken at the other institution for a total of 6 units. A nominal registration fee of $2 will be charged at the other institution. Credit so earned is not defined as transfer credit. This program applies to both graduate and undergraduate students.

Special Conferences and Courses

Special Programs for Teachers of Science and Mathematics

It is anticipated that the Summer Session will offer a number of special programs at the graduate level designed specifically for high-school teachers of science and mathematics. For detailed information on the

programs, teachers should write Dr. Thomas Reynolds, Mathematics Department, Duke University, Durham, North Carolina.

Conference on Law and Education

A conference on law and education will be held on Duke University campus on August 12-13. Conference sessions will deal with facets of American law which are relevant to the educational setting. The program is planned for the benefit of administrators and teachers in schools, colleges, and universities, as well as interested students enrolled in the Duke Summer Session.

Duke University ABC Program

In the summer of 1969, Duke University will sponsor for the fourth consecutive year a program known as Project ABC (A Better Chance). This program will bring to the campus for a six-week period a group of boys, ages thirteen to sixteen. These students will participate in an intensive program in reading, English, and mathematics in preparation for their entrance in the fall to independent boarding schools. The Duke ABC Project is designed to prepare students for the difficult curriculum and new way of life at boarding school.

Southeastern Institute of Medieval and Renaissance Studies

The Southeastern Institute of Medieval and Renaissance Studies has been established for the advancement of scholarship and the improvement of teaching in the southeastern region. Through the Institute the resources of Duke University and the University of North Carolina—particularly library holdings—will be made available to scholars and teachers throughout the region. Students in all areas of medieval and renaissance studies will participate. The Institute will alternate annually between the campuses of Duke University and the University of North Carolina at Chapel Hill. The fifth session, from July 15 to August 22, 1969, will be held on the University of North Carolina Campus.

Highlands Biological Station

Duke University holds a subscribing instructional membership in the Highlands Biological Station at Highlands, North Carolina, on the southern edge of the Blue Ridge Mountains at an elevation of 4,118 feet. The situation and the region offer an excellent opportunity for field studies and some laboratory work. A limited number of qualified students in Botany and Zoology may make arrangements to carry out research at this station.

Medical Mycology

A month's course in Medical Mycology, under the direction of Dr. Norman F. Conant, is to be offered at Duke University School of Medicine and Duke Hospital, June 30–July 26, 1969. The course will be offered every day in the week, except Sunday, and has been designed to insure a working knowledge of the human pathogenic fungi within the time allotted.

Emphasis will be placed on the practical aspects of the laboratory as an aid in helping establish a diagnosis of fungus infection. Insofar as possible and as patients become available, methods of collecting materials in the clinic for study and culture will be stressed. Work with patients, clinical material, cultures, and laboratory animals will serve as a basis for this course. Also, an opportunity to study pathologic material, gross and microscopic, will be given those whose previous training would allow them to obtain the greatest benefit from a study of such material.

The enrollment for the course will be limited and the applications will be considered in the order in which they are received. An attempt will be made, however, to select students on the basis of their previous training and their stated need for this type of work.

A fee of $100.00 will be charged for this course, upon the completion of which a certificate will be awarded. However, an applicant upon acceptance into the course may register with the Summer School, pay its fees instead of the aforementioned fee, and receive 3 hours graduate credit for the course. Please direct all inquiries to Dr. Norman F. Conant, Professor of Microbiology, Duke University Medical School, Durham, North Carolina.

The Methodist Course of Study School

The twenty-first session of the short-term school for Methodist ministers taking the required Course of Study will be conducted during the period, July 7–August 1, 1969. While this School is designed primarily for Supply Pastors and other non-seminary candidates for the Methodist ministry, clergymen of any denomination may enroll. The curriculum, as approved by the 1968 Methodist General Conference, will be followed, and will include Studies for License to Preach, Introductory Studies, and the Studies for the First, Second, Third, and Fourth Years, as well as Advanced Studies.

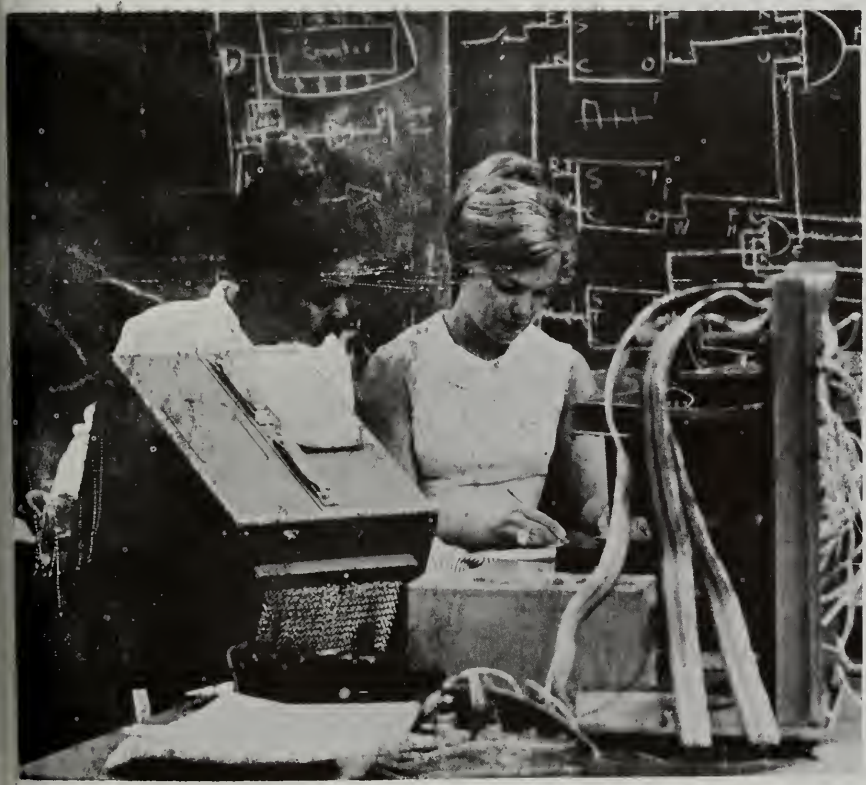
In addition to class work, there is provision for daily worship and a number of special lectures and workshops. A varied program of recreation and athletics will be supervised by the University Department of Physical Education.

Registration is scheduled for July 7. Classes begin on the morning of July 8 and continue through August 1. A descriptive folder giving

details of the School will be ready for distribution about March 1, 1969, and copies may be procured by writing to Professor O. K. Ingram, Director, Box 4484, Duke Station, Durham, North Carolina 27706.

Divinity School Summer Clinics

Summer Clinics in Pastoral Care, Preaching, Theology, Church Planning, Campus Ministry and possibly other topics are tentatively scheduled for August 4-15, 1969. These clinics are designed to supplement seminary education through two weeks of intensive training in one selected subject. Registration is open to ministers of all denominations. Participants are expected to attend the full two weeks from the opening dinner to the closing luncheon. Each clinic has its own leaders and schedule. No academic credit is given. Please address requests for information to: Summer Clinics, The Divinity School, Duke University, Durham, North Carolina 27706.



Resources for Study

Libraries

The new William R. Perkins Library building, the main research library of the University, was opened late in 1968. Providing more than twice the space available than existed in the old building, the Perkins Library seats 1250 and accommodates 1,500,000 books. When renovation of the old building is completed in late 1969 or early 1970, the complex will have 2100 seats, about 700 of which will be private study carrels in the stacks, and room for almost 2,500,000 volumes. The building is electrically heated and air-conditioned.

On June 30, 1968, the University Libraries contained 1,940,146 volumes and more than 4,000,000 manuscripts. About 80,000 volumes were added during the year; 170 newspapers and approximately 10,000 periodicals are received currently. Many rare, perishable and out-of-print materials including books, newspapers and periodicals are available in microtext form and may be read in a special microtext reading room in the new building.

All libraries of the University are open for use throughout the summer. A guide to the William R. Perkins Library which describes the building and its collections is available upon request addressed to the University Librarian, Perkins Library, Duke University, Durham, North Carolina 27706.

Laboratories

The laboratories in the various Science Departments (Botany, Chemistry, Physics, Psychology, and Zoology) are designed for both teaching and research. Ideal locations for special work in some of the sciences are available at Duke University Marine Laboratory at Beaufort, North Carolina; at Highlands Biological Laboratory at Highlands, North Carolina; in the Duke Forest at Durham, North Carolina; and in the Sarah P. Duke Gardens on the West Campus of Duke University.



Student Life

Living Accommodations

Summer Session students reside in resident facilities on West Campus of Duke University. Air-conditioned residence halls will be available for undergraduate men and graduate and undergraduate women. Some units in Town House Apartments on Swift Avenue and a women's section in the Graduate Center will be available to graduate women. Graduate men will be assigned to the men's section in the Graduate Center near the Medical Center. Married graduate and professional students may rent apartments on a space available basis.

Undergraduates, both men and women, are required to live in the residence halls unless they are married or living with parents or relatives. Any exception must be approved in advance by the Dean of Undergraduate Women or the Dean of Undergraduate Men, as appropriate.

The majority of residence hall rooms at Duke University are double rooms furnished for two persons. A limited number of single rooms are equipped for one person and are assigned in order of receipt of application with the required rental payment in the office of the Director of Housing. No double room in the air-conditioned section may be reserved for single occupancy. Double rooms in the non-air-conditioned residence halls may be rented for single occupancy at the rates shown on page 31.

Summer Session students who will be in residence at Duke University for both summer terms must so indicate on the Summer Session Housing Application and pay for both terms in advance. Those applicants who apply for housing for one term only but desire to remain for a longer period or those who fail to pay rent in advance for both terms at the time of application may be requested to move for the Second Term.

Assignment Procedures

Undergraduate Men: Three sections of the air-conditioned residence halls will be reserved for undergraduate men. If additional spaces are required, one or more houses will be opened on the main quadrangle.

Undergraduate Women: Rooms in the air-conditioned residence halls will be available for assignment to all undergraduate women.

Graduate Men: The men's section of the Graduate Center will be available for graduate men.

Graduate Women: A section of the air-conditioned residence halls, spaces in Town House Apartments, and rooms in the women's section of the Graduate Center (not air-conditioned) will be available for graduate women. Priority for air-conditioned residences and apartment-type accommodations will be given to those graduate women applicants who apply for eight weeks or more of the Summer Session and make payment for the entire period of application.

If the type of accommodation for the first choice by a student is not available, another type of accommodation at a lesser cost will be assigned unless the applicant indicates otherwise.

Married Students: Students who will be accompanied by their families and desiring to occupy family units should write directly to the Director of Housing Management, Duke University, Duke Station, Durham, North Carolina 27706 for complete information on available accommodations and assistance which can be offered by the Housing Office.

Equipment

Air-conditioned Residence Halls: Each student will be provided with a sofa-bed with cover, desk with chair, dresser with mirror, waste basket, and adequate closet space. Each room is equipped with draperies, carpeting, and wall book shelves. The student should provide a desk lamp, sheets, blanket, pillow, and other items desired. Beds measure 30 inches by 30 inches.

Non-air-conditioned Residences: Each student is provided with a 36 by 74 inch bed, dresser with mirror, desk with chair, and a bookcase. The student should provide a desk lamp, sheets, blanket, and pillow. An electric fan is recommended.

Town House Apartments: Each attractive, air-conditioned apartment

is equipped for three women students, and includes living room, kitchen, master bedroom (2 students) with half bath, a single bedroom (one student), and a master bath with tub and shower. Housekeeping supplies, kitchenware, and linens must be provided by the occupants. It is recommended that two or three students apply to reside together in one of these units. These units are available for family use during summer months.

Duke University Marine Laboratory

The Duke University Marine Laboratory, located on Pivers Island adjoining the United States Bureau of Fisheries across the Newport River from Beaufort, North Carolina, has cottage-type residence halls which will be available for Summer Session students. All rooms in the Marine Laboratory residence halls are equipped for two persons. There is a separate building for dining and social activity. Double rooms will not normally be occupied as single rooms for the Summer Session. Reservations for rooms at the Marine Laboratory at Beaufort should be made with the Business Manager, Duke University Marine Laboratory, Beaufort, North Carolina, by submitting a Summer Session Residence Hall Application with your personal check for the amount of your room rent.

Dining Service

Food service is cafeteria style. The cost of meals runs from $2.50 to $3.00 per day, depending on the need and taste of the individual. Only the dining facilities on the West Campus will be used for the regular Summer Session students. The cafeteria in the Men's Graduate Center is usually not open in the summer.

Services Available

Medical Care

The Student Health Service, in the Duke Medical School Building, operates during the Summer Session and offers exactly the same medical and surgical services available to each full-time student during the academic year, as described completely in the Undergraduate *Bulletin*, but covers only *six days* of hospitalization in each term of Summer Session residence.

With the exceptions noted below, this service, under the direction of the University Physician, and with the cooperation of the staff of Duke Hospital, furnishes full medical and surgical care, drugs, dressings, x-ray work, and ward, but not special nursing, for any acute

illness or injury, at no additional cost beyond the University fee for each term of residence or any shorter period. The cost of braces and necessary orthopaedic appliances and of blood, as well as special nursing, must be borne by the student. A charge for meals ($1.80 per day) will be made while the student is in the Hospital. All necessary telephone and telegraph charges will be borne by the student. If students have insurance providing hospitalization, surgical or medical benefits, these benefits shall be applied to the cost of their medical care. Refraction of eyes, treatment of teeth, and of all chronic and pre-existing conditions such as diseased tonsils, hernias, elective surgery, chronic skin conditions, endocrine disturbances, etc., or accidents or illness occurring during vacation or while off the campus are not included in this service.

No illness is treated in dormitory or other rooms occupied by students. Students needing treatment for minor medical or surgical conditions have the facilities of the Student Health Office in the Hospital between 9:00 a.m. and 4:00 p.m. on week days and from 9:00 a.m. until 12:00 noon on Saturdays. Emergency room care is available on Saturday afternoons, Sundays, and the 4th of July holiday. For admission to the Hospital, or for X-ray and consultation services, a student must present the 1969 Summer Session Student Identification Card as evidence that he is matriculated in the Summer Session and entitled to hospitalization. Students who register for 3 semester hours' credit, or for at least 1 hour of research, are entitled to medical care without charge.

Appointments (placement) Office

Duke University maintains an Appointments Office which acts as a liaison between the University and potential employers in business, education, and government. All services are offered without charge to students in the Summer Session who are registered for a degree in Duke University. The staff is available to talk with Summer Session students about their professional plans and with school officials who may be seeking the services of new teachers. Students who are eligible to register with the office are offered an opportunity to assemble a complete dossier of academic records and recommendations to supplement applications for positions and to have a permanent file for future reference. Pertinent recommendations are far easier to accumulate during the time a student is enrolled at Duke. Copies of academic records are released only with the permission of the individual.

The University Counseling Center

The University maintains a University Counseling Center which provides a centralized program of educational, vocational, and personal counseling for students. This confidential counseling service on problems of personal, social, educational, and vocational adjustment is

provided without cost to students enrolled at the University. In addition, the Center administers special group testing programs for University schools and departments and serves as the local testing center for a wide variety of national testing programs. The Center also carries on programs of research in the field of measurement and counseling. Although the counseling, testing, and research services of the Center are designed primarily to meet the needs of the students, the faculty, and the staff of Duke University, these services are made available to individuals and organizations outside the University as its facilities permit. Requests for further information should be addressed to the Director, University Counseling Center, Duke Station, Durham, North Carolina, 27706.

Student Activities

Religious Life

The Chapel, home of Duke University Church, interdenominational, is open all summer. The Church encourages the cultivation of the spiritual and moral life of students through participation in the service of worship which is held each Sunday morning at nine-thirty o'clock. The pulpit is occupied by a regular University preacher, or a special visiting preacher. Choral music for these services is provided by a volunteer student choir.

Recreation and Activities

The Summer Session will provide a varied program of entertainment and recreation. These plans include movies, presented once weekly by Quadrangle Pictures, weekly summer dances and open house social evenings with games for those who do not care to dance. Tours to areas of interest can be arranged for week-ends. Both the mountains and the seashore are easily accessible. Adequate facilities are available for those interested in swimming, tennis, and other sports. State clubs organized for the summer play an active part in all social activities.

Publications

During the Summer Session the University will publish each Saturday *The Duke University Calendar*, an official calendar announcing events—academic, social and recreational—of the following week. This calendar also includes official notices concerning academic requirements. Students are expected therefore to read the *Calendar* regularly.

Conduct of Students

Duke University expects and will require of all its students continuing loyal cooperation in developing and maintaining high standards of scholarship and conduct.

The University wishes to emphasize its policy that all students are subject to the rules and regulations of the University as currently in effect or from time to time put into effect by the appropriate authorities of the University.

Any student, in accepting admission, indicates his willingness to subscribe to and be governed by these rules and regulations and acknowledges the right of the University to take such disciplinary action, including suspension and/or expulsion, as may be deemed appropriate, for failure to abide by such rules and regulations or for conduct adjudged unsatisfactory or detrimental to the University.

Admission

Students in the following categories may be admitted to the Duke University Summer Session:

1. Graduates and undergraduates who are presently enrolled and in good standing in Duke University.
2. Graduates and undergraduates who have been formally admitted, or re-admitted, to Duke University.
3. Students who are currently in good standing at their respective institution and who have approval by the proper authority to take and transfer credits earned in the Duke Summer Session.
4. Teachers in service with or without the Bachelor's degree who wish to earn credits for certification purposes.

Admission to specific courses offered in the Summer Session is governed by the student's academic status (freshman, sophomore, junior, senior, graduate, special or unclassified) and by the prerequisites of the course in question.

Students in Residence at Duke University during the Spring Semester, 1969

A Duke University student, either graduate or undergraduate, who plans to attend the Summer Session should at the time of preregistration for the fall semester (see p. 35 for specific dates) enroll for the

desired Summer Session courses. He need *not* file with the Summer Session the application blank at the end of this *Bulletin.*

Students Not in Residence at Duke University during the Spring Semester, 1969

Undergraduates. New students seeking to enter Duke University as freshmen or as undergraduates with advanced standing, and undergraduates who wish to re-enter the University should write the Office of Admissions requesting application forms.

Undergraduates, both men and women, enrolled in other colleges and universities who desire to earn in the Duke University Summer Session credits which are to be transferred to their own institutions should apply directly to the Director of the Summer Session, Duke University, on the application form at the end of this *Bulletin.* They should give accurately and clearly all information called for on the application form.

Graduates. Students with graduate standing and teachers in service with or without the Bachelor's degree who wish to earn credits toward the renewal or the advancement of their certificate and who do not wish to become candidates for a degree at Duke University should apply to the Director of the Summer Session on the application form at the end of this *Bulletin.*

Graduate students who are seeking admission to the Graduate School and those who have been admitted to the Graduate School must apply to the Director of the Summer Session on the application form at the end of this *Bulletin.* Those who are seeking admission to the Graduate School *must also file* Graduate School application forms which may be secured by writing to the Dean of the Graduate School, Duke University, Durham, North Carolina.

Students Not Seeking Admission to the Graduate School. Any student who holds an A.B. or B.S. degree and who does not intend to earn an advanced degree at Duke University but who desires graduate work for professional or other reasons should apply to the Director of the Summer Session for admission as an unclassified student. Credit earned by an unclassified student will serve all usual purposes except that it will not count toward an advanced degree at Duke University.

Students Seeking Admission to the Graduate School. Admission may be granted to a student who has received an A.B. or B.S. degree from an accredited institution after a four-year course of study. The undergraduate record should be well rounded and of such quality as to give evidence of real capacity for success in graduate study. A student who seeks admission should (1) secure an application blank from the Graduate School and promptly return it with the required information, (2) have mailed

directly from the registrar of each college he has attended to the Dean of the Graduate School at Duke University two copies of an official transcript of all his undergraduate or graduate work, (3) have mailed to the same official at least two, and preferably three, letters of recommendation from persons best qualified to appraise his capacity for graduate study. Special forms will be provided.

As additional evidence of capability scores on the Graduate Record Examination, particularly the Aptitude Test, and on the Miller Analogies Test are strongly recommended in all departments and must be submitted if either test has been taken. Scores on the Graduate Record Examination may be requested of any applicant whose record is marginal and must be submitted by all applicants for a fellowship. Departments that require scores of all applicants are listed below:

Departments	*Graduate Record Examination*		*Miller Analogies Test*
	Aptitude	*Advanced*	
Anatomy	×	×	
Biochemistry	×	×	
Botany	×	×	
Chemistry	×	×	
Economics	×	×	
English	×	×	
Forestry	×		
Geology	×		
German	×		
History	×		
Mathematics	×		
Microbiology	×	×	
Music	×		
Pathology	×[1]		
Philosophy	×	×	×[2]
Physics	×	×	
Physiology	×	×	×
Political Science	×		
Psychology	×	×	×
Religion	×		
Romance Languages	×	×	
Sociology	×	×	
Zoology	×	×	

[1] If the candidate does not already hold an M.D. or D.V.M. degree he will be required to take the GRE Aptitude Test.

[2] Either GRE or MAT.

(Information on times and places of Graduate Record Examinations can be provided at the applicant's college or by the Educational Testing Service, 20 Nassau Street, Princeton, New Jersey.)

So that applications for admission to the Graduate School for summer work may be given full consideration, the student must submit all required documents to the Dean of the Graduate School at least ONE MONTH before the date of intended registration. No student may register with the Graduate School until his application has been completed and admission has been granted.

Postdoctoral Scholars

Application for these postdoctoral research privileges must be made in advance by letter to the Director of the Summer Session giving the applicant's present position, the specific field of his research interest, and the dates during which he desires to be in residence. Approved applicants will be accepted subject to the availability of library and of dormitory space.

Admission to Degree Candidacy

Credits earned during the Summer Session may be applied toward the requirements of a degree.

Undergraduates. A student seeking to enroll as a candidate for the Bachelor's degree from one of the colleges of Duke University must meet the entrance requirements set forth in the *Bulletin of Undergraduate Instruction* and be accepted by the Director of Admissions. This *Bulletin* may be secured by writing the Office of Admissions, Duke University.

Graduates. A student seeking to enroll as a candidate for one of the advanced degrees offered by the Graduate School of Duke University must meet the requirements set forth in the Graduate School *Bulletin.* This *Bulletin* may be secured by writing to the Office of the Graduate School.

Financial Information

Tuition, Fees and other Expenses

Tuition and Fees

The University Tuition. This charge, which covers registration and medical care, is $55.00 per semester hour for undergraduates, $47.00 per unit for graduate students. Special tuition rates have been established for:

1. Teachers in full-time service in elementary and secondary schools: $25.00 per semester hour.
2. Divinity School students approved by the Dean of that School: $23.50 per semester hour.

Laboratory Fees. For Marine Laboratory investigators' research table fees, see the Marine Laboratory *Bulletin*.

Medical Mycology Fee. This fee of $200.00 replaces the University tuition.

Master's Degree Summer Session Tuition. A Master's candidate who submits his thesis when not registered for at least the 1-unit research-residence tuition is required to pay a 1-unit tuition of $47.00.

Auditing Fees. (See p. 35 for definition.) These fees are as follows:

1. Students registered for a full course program may audit non-laboratory courses (with the permission of the Director) at no extra charge.

2. Students carrying less than a full course program may be granted permission to audit a course or courses on payment of half the University fee per semester hour audited.

Late Registration Fee. Students who fail to register prior to the first class day of a given course will pay an extra fee of $10.00.

Fee for Course Changes. Course changes other than those required by the University will be made only on payment of an extra fee of $1.00 per change.

Fee for Make-up Final Examination. This fee is $5.00.

Refund of Tuition and Fees. Tuition and fees will be refunded under the following circumstances:

Refund of Tuition and Fees

1. When applications for withdrawal are received by the Director of the Summer Session before the close of registration on registration day, full tuition and fees will be refunded.
2. When applications for withdrawal are received by the Director of the Summer Session during the first four class days of a given term, 80 per cent of the tuition and fees will be refunded.
3. When applications for withdrawal are received by the Director of the Summer Session after the fourth class day, there will be no refund of tuition and fees.

Residence Halls Rates

Air-Conditioned*

Single—		Double—	
10 weeks	$170.00	10 weeks	$125.00
9 weeks	153.00	9 weeks	112.50
8 weeks	136.00	8 weeks	100.00
5 weeks	85.00	5 weeks	62.50
4 weeks	68.00	4 weeks	50.00
1 week	17.00	1 week	12.50

* Not available for graduate men. Space limited for graduate women.

Non-Air-Conditioned

Single—		Double—		Double Rooms used as Singles—	
10 weeks	$110.00	10 weeks	$ 87.50	10 weeks	$140.00
9 weeks	99.00	9 weeks	78.75	9 weeks	126.00
8 weeks	88.00	8 weeks	70.00	8 weeks	112.00
5 weeks	55.00	5 weeks	43.75	5 weeks	70.00
4 weeks	44.00	4 weeks	35.00	4 weeks	56.00
1 week	11.00	1 week	8.75	1 week	14.00

Town House Apartments (Graduate Women)

$18.00 each student per week (3 to an apartment)
$27.00 each student per week (2 to an apartment)
(Not assigned for less than 4 weeks)

Duke University Marine Laboratory

5 weeks—$45.00 Per Person

Application for room or apartment reservations at Duke University, accompanied by the full amount of the room rent for the application period, should be made to Office of Housing Management, Duke University, Duke Station, Durham, North Carolina. Rooms and spaces in apartments will be reserved in the order in which applications are received, and on certification of admission by the Summer Session Director. Notification of assignment to rooms will be made about May 30 for the First Term; about July 10 for the Second Term.

Rooms and apartments are available to applicants twenty-four hours prior to the registration for a specific term of the Summer Session. A room or apartment is to be vacated by the occupant within twenty-four hours after his final examination or agreement period. Any period of occupancy, other than for a specific term of the Summer Session, must be arranged with the Office of Housing Management, House D, Room 101R, Duke University.

Refund of Room Rent. Refunds are made under the following circumstances:

1. When notification for room cancellation is received by the Office of Housing Management on or before fifteen (15) days prior to the registration date of the summer session term, full room rent will be refunded.
2. When notification for room cancellation is received between the fifteen (15) days prior to registration date and the first four class days, 80 per cent of the room rent will be refunded.
3. When notification for room cancellation is received after the first four days of a summer session term, 70 per cent of the room rent for the unused period will be refunded.

Applicants should be sure to express their preference as to roommates, if they have a preference. If no preference of roommate is expressed the Office of Housing Management will assign a roommate; however, this office does not assume responsibility in this matter.

Estimated Cost of One Term of Summer Session

University tuition, 6 s.h. (Undergraduate) $330.00
(Teachers, elementary and secondary, in full-time service pay $150.00; Graduate students pay $47.00 per unit).

Dormitory Rooms (Double room, 5 weeks)	43.75*
Meals (Cafeteria selective; average per day $2.50)	90.00*
Books and Class Materials $7.00 to $10.00	8.50*
Miscellaneous (laundry, etc.)	12.00*
Total (for undergraduates)	$484.25

* Approximate costs which will vary according to individual tastes and needs.

Student Aid

Special Tuition Rate to Teachers

Teachers in full-time service in elementary and in secondary schools, who are accepted by the Summer Session, pay only $25.00 per semester hour. Teachers on leave of absence from their schools and teachers not currently employed are not eligible for this special fee.

Scholarships for Public School Personnel

Duke University will offer thirty-two special scholarships of $175.00 each to high school and elementary teachers on a competitive basis (not by a written examination) for the Summer Session of 1969. This scholarship program is designed to encourage teachers to begin or to continue their graduate studies leading to the A.M., M.Ed., or M.A.T. in Teaching degree.

Duke University will again offer five special scholarships of $200.00 each to high school and elementary administrators and supervisors. This scholarship program is designed to encourage principals and supervisors to continue their graduate studies leading to advanced degrees.

Although successful applicants for the scholarships will not be required to become candidates for a degree, they must qualify for and receive admission to the Graduate School.

All applications with supporting documents must be submitted by April 1, 1969. Selection and appointment of scholars will be completed by May 1, 1969.

Application blanks and complete information may be obtained from the Director of the Summer Session, Duke University, Durham, North Carolina 27706.

Loans

A number of loan funds have been established for the benefit of the students of Duke University. Several of these funds are available to students enrolled in the Summer Session. Students enrolled in the Sum-

mer Session *only* are not eligible. These funds are administered through a committee of officers of the University.

The Committee, in approving loans, selects those students who, from the standpoint of character, scholastic attainment, and degree of financial need, are deserving of consideration.

Applicants for loans should make application to the Manager, Student Loan Office, Duke University. All applications must be initiated during the first week of each term. The granting or withholding of a loan is a matter entirely within the discretion of the Student Loan Committee. A student is expected to use all other possible means of securing financial assistance before applying for aid from a loan fund.

National Defense Education Act Loans. A limited number of loans may be made, under the provisions of the National Defense Education Act of 1958, to students in the Summer Session who have been regularly enrolled in the University prior to the Summer Session. A student who is enrolled for study in the Summer Session *only* is not eligible for consideration. Students pursuing the M.A.T. Cooperative Program are not eligible. Inquiries concerning opportunities available under this program for this benefit should be made to the Manager, Student Loan Office, Duke University, Durham, North Carolina 27706.

Remission of Tuition

Children of Methodist ministers who are members of the North Carolina and Western North Carolina Conferences of the United Methodist Church are entitled to a remission of the tuition charge as are the children of ministers of all faiths residing in Durham County, North Carolina. This consideration is given only to the children of resident members of the two North Carolina conferences who are giving their full time to religious work. Only those students enrolled in a regular undergraduate program leading to a baccalaureate degree from Duke University are entitled to this benefit. Students in this group are entitled to a maximum of eight semesters of free tuition at the undergraduate level. Application for this benefit should be made to the Director of Undergraduate Financial Aid, Duke University, Durham, North Carolina 27706.

Tuition Grants

Tuition grants are available to children of faculty and qualified staff members of Duke University. Information regarding the tuition grant program may be obtained by writing to the Director of Undergraduate Financial Aid, Duke University.

University Registration and Regulations

Definition of Terms

Registration. A student has completed registration for the Summer Session when:

1. His course program has been written and approved by the dean of the school or college in which he is enrolled or by the Director of the Summer Session in the case of the special or unclassified student.
2. Summer Session forms have been completed properly by the student in the Summer Session Office.
3. Summer Session University fees have been paid. A place in a course cannot be assured until fees have been paid. Tuition bills are not sent to the student's home.

Pre-enrollment. The term pre-enrollment refers only to the writing of the course program and its approval by the proper authority or by the Director of the Summer Session in the case of the special or unclassified student. *Pre-enrollment alone does not constitute registration.*

General Registration

Classes Beginning June 11. All Summer Session students whose classes begin on June 11, Term I, who *do not* complete registration in the Sum-

mer Session Office, 119 Allen Building, on or before June 5 *must* present themselves at general registration in the Summer Session Office, 119 Allen Building, on June 10 to register. Students will register during 30-minute periods alphabetically according to *surname* as indicated in the following table.

Time	*Registrants (Surname)*
8:30– 9:00	A–B
9:00– 9:30	C–E
9:30–10:00	F–H
10:00–10:30	I–L
10:30–11:00	Mc–N
11:00–11:30	O–P
11:30–12:00	Q–R
12:00–12:30	S–T
12:30– 1:00	U–Z

Classes Beginning June 17. All Summer Session students whose classes begin on June 17, Term I, must complete registration in the Summer Session Office, 119 Allen Building, on or before June 16.

Classes Beginning July 19. All Summer Session students who wish to register for courses offered during Term II or for research during Term II may register in the Summer Session Office on July 8 through July 16. All students who *do not* register for second term during this period *must* register in the Summer Session Office, 119 Allen Building, on July 18, between 8:30 a.m. and 1:00 p.m.

Classes Beginning on Other Dates. All Summer Session students registering for courses beginning on dates other than those specified above must complete registration in the Summer Session Office *before* the date on which their classes begin. *Registration on the day on which classes are scheduled to begin will be considered late registration.*

Late Registration

Any student who fails to register on or before the dates specified in the preceding paragraphs will be charged a fee of $10.00 for late registration. No student will be permitted to register for a 3 semester hour course after the third class day (June 13, Term I; July 22, Term II); a 4 semester hour course after the second class day (June 18, Term I; July 22, Term II). Changes in courses other than those required by the University will require a payment of $1.00 for each change made. All changes must be approved by the dean of the school or college in which the student is enrolled or, in the case of the special or unclassified student, by the Director of the Summer Session. Changes in courses

may be made within the first three class days. These registration rules are enforced rigidly.

Since Summer Session courses present a program of study in more concentrated and rapid form than in the regular semesters, students are advised to register on time and to be present at all class sessions.

Advance Registration

Students in Residence at Duke University during the Spring Semester, 1969

Writing Course Programs in the Schools and Colleges. Students in residence at Duke University during the Spring Semester, 1969, both graduate and undergraduate, who plan to enroll for courses offered in the 1969 Summer Session or to carry on research during the period of the Summer Session will write course programs and have them approved in their respective schools or colleges during the week of pre-registration, April 7-10, 1969. Graduate students will pre-register on April 9-10.

Advance Registration in the Summer Session Office. Students in residence whose course programs have been written and approved by their respective colleges on the dates indicated above may complete their registration in the Summer Session Office, 119 Allen Building, on the following dates:

Graduate and undergraduate students—May 9 through June 5
Registration in the Summer Session Office includes:

1. Completion of various Summer Session forms.
2. Payment of University fees.

A student who registers with the Summer Session Office during this period will not be required to be present at general registration on June 10. He will begin his class work on the date his classes are scheduled to begin: June 11 or June 17.

Students Not in Residence at Duke University during the Spring Semester, 1969

Advance Registration by Mail. Students not in residence at Duke University during the Spring Semester, 1969—new undergraduate students seeking to enter as degree candidates, graduate students who are not candidates for an advanced degree at Duke University, graduate and undergraduate students of other colleges and universities desiring to earn credits for transfer, public school teachers and college teachers (not advanced degree candidates)—may register by mail. Advance registration by mail includes:

1. Completion in full of the application form at the end of this *Bulletin.*
2. Admission to the Summer Session by the Director of the Summer Session and, in the case of students seeking to enter Duke University as degree candidates, admission by the Admission Directors to the school or college of Duke University concerned.
3. Completion in full and return of forms required by the Summer Session Office by June 5.
4. Payment of University fees by June 5. A student may *pre-enroll* by mail without paying the University fees but he *cannot register in advance* without doing so.

Students who complete registration by mail on or before June 5 need not be present at the general registration on June 10.

Degree Candidate Graduate Students Not in Residence during the Spring Semester, 1969. All graduate students not in residence during the Spring Semester, 1969, who are candidates for an advanced degree in the Graduate School of Duke University *must* present themselves for registration in the Summer Session Office, 119 Allen Building, on June 10. They cannot complete registration by mail because:

1. Their program of study for the summer must be approved by their Director of Graduate Studies.
2. Their course programs must be written and approved by the Graduate School.

These students may pre-enroll by mail with the Summer Session Office and may pay their fees in advance, but they cannot complete their registration.

Registration of Graduate Students

Graduate students in residence during the spring semester will pre-register for either or both terms of the Summer Session on April 9-10. Other students who have been admitted to the Graduate School should present themselves for registration at the official registration period, June 10 for the first term, and July 18 for the second term. They are required to register both with the Summer Session and the Graduate School.

Graduate students resident in the spring semester who intend to remain in residence during either or both of the two Summer Session terms without registering for course work or research must register for one unit (one semester hour) to cover the cost of medical care and the use of University facilities. This one unit (one semester hour) of registration will entitle students to use the Student Health Service and University facilities during both terms of the Summer Session. The Master's candi-

date who has completed all requirements except submission of the thesis and who so registers is not charged any separate fee for submitting the thesis.

Academic Regulations

Kinds of Course Enrollment

Summer Session courses may be taken for "credit" or for "non-credit" or may be "audited." A student's program may be exclusively in one of these categories, or may combine any two of them or all three. Students taking a full or partial program for "credit" may enroll as auditors or as non-credit students in any number of additional courses.

Credit. The Summer Session term "credit" does not mean degree credit at Duke University unless the student has been admitted as a degree candidate by one of the colleges or schools of the University. A student taking a course for credit is expected to do all the work required and to take the final examination, and he will receive a grade. G.I. Bill benefits are available only to those veterans who enroll for credit.

Non-credit. "Non-credit" enrollment is available to the student who wishes the privilege of participating in class discussions, exercises, and the laboratory assignments but does not wish to take the examinations, either mid-term or final. A "non-credit" student may do as much of the work of the course as he desires, but he may not take the final examination and he will not receive a grade. Full fees of $55.00 per semester hour are required in "non-credit" enrollment.

Audit. An auditor is entitled to listen to lectures and class discussions, but he may not participate in discussions or take examinations. Students may not enroll as auditors in laboratory courses. A student carrying a full program for credit may be given permission to audit as many courses as he desires without additional fees. Students carrying less than a full program for credit may secure permission to audit but are required to pay the auditing fee, which is half the regular fee.

Credits

The Summer Session courses are of the same quality and credit values as courses in the regular semester. Credit earned in the Summer Session is in terms of semester hours. The majority of Summer Session courses carry 3 semester hours credit and require one term in residence. A limited number of basic courses in the sciences carry 4 s.h. credit (chemistry, geology, physics).

Credits for Transfer. A student desiring either graduate or undergraduate credits transferred from Duke University to his university or college

as degree credit must request from the Director of the Summer Session, Duke University, a Course Approval Form to be completed by the student's Dean or Registrar and returned to the Director of the Summer Session, Duke University.

Transfer of Graduate Credits. Under certain circumstances a maximum credit of 6 units in a Master's degree program may be allowed for graduate courses completed elsewhere. Approval for the transfer of credits will not be given until the student has spent one semester or two terms in residence. The acceptance of credit up to this amount will not reduce the minimum period of full-time registered residence at Duke University. In no case will credit be allowed for extension or correspondence courses.

With the approval of both the student's major department and the Dean of the Graduate School, a student who is granted such transfer for credit may be permitted to register for as much as 12 units for thesis research instead of the usual 6 units. Or he may be permitted to fill out his schedule with as much as 6 semester hours of further undergraduate training or 6 semester hours of required language courses on the undergraduate level.

For regulations concerning applying graduate credit earned elsewhere to a graduate program here, consult the Graduate School *Bulletin.*

See page 14 for information concerning reciprocal agreement with the University of North Carolina.

Professional Credits Toward Teacher's Certificates. Professional credits toward teacher's certificates are granted by the various state boards of education, each in accordance with its own carefully planned rules. Teachers in service, before enrolling for certification credit, should consult the rules laid down by their State Board of Education. If necessary, they should send to their State Board of Education a list of the courses in which they plan to enroll and inquire whether these will be acceptable for certification credit.

Normal Course Program

The normal and maximum program for one term of the Summer Session is 6 semester hours, except in cases where students take a 4 semester hour language course. In those cases 7 semester hours per term will be allowed. The 4 semester hour courses in the sciences run for four weeks and one such course constitutes a full course program. Four semester hour courses in the sciences do not meet on Saturday.

Grading

Only a student taking a course for credit will receive a grade. The grade given represents the quality of the work done in the course.

Passed.

Undergraduate Grades	*Graduate Grades*
A—excellent	E—exceptional
B—good	G—good
C—average	S—satisfactory
D—poor but passing	

Failed. A grade of F indicates that the student has failed the course, and in order to receive credit for the course he must repeat the work in class.

Incomplete. A grade of I may be reported by the instructor if for any reason he is unable to report the final grade at the regular time. Incomplete courses must be completed before the close of the succeeding semester; otherwise the I is recorded as F, and the course must be repeated in class if the student is to receive credit for it.

Absent from Final Examination. The grade X indicates that the student was absent from the regularly scheduled examination. A student absent from examination, if the absence has been excused by the dean of the college or school in which he is enrolled or, in the case of the special or unclassified student, by the Director of the Summer Session, may receive an examination upon the payment of $5 to the Treasurer of the University. The instructor concerned arranges for the examination in cases where absences are excused. A student with an X grade who has not obtained a passing grade before the end of the semester following that in which the X was incurred is regarded as having failed in the course concerned and must repeat the work in class in order to receive credit. If a student's absence from an examination is not excused by the dean of the college or school in which he is enrolled or, in the case of the special or unclassified student, by the Director of the Summer Session, his grade for the course concerned is recorded as F.

Examinations

Final examinations in courses are held on the last two days of each term. Final examinations for short courses which occupy the student's complete program will be held on the last day of the course. The examination dates for 1969 are:

First term: July 15-16.
Second term: August 22-23.

Courses in science for the first term have been scheduled so that their final examination will come on July 16. The science courses which begin July 21 and run for four weeks will have their final examination on August 15. The University has no provision for giving examination *in absentia.* Students absent from examinations for valid reasons are permitted a

liberal extension of time to return to the University for completion of credit.

Dropping of Courses

If a student drops a course without permission from the dean of the school or college in which he is enrolled or, in the case of the special or unclassified student, the Director of the Summer Session, the grade for that course is recorded as F. If he drops a course with permission, the grade for that course is F unless, in the judgment of the dean or director, circumstances do not justify this penalty.

Withdrawal from the Summer Session

If a student wishes to withdraw from the Summer Session, he must notify both the dean of the school or college in which he is registered and the Director of the Summer Session.

Other Regulations

Motor Vehicle Registration

Students enrolled in the Summer Session must register their motor vehicles with the Traffic Office, 08 Social Science, West Campus.



Courses of Instruction

Eligibility for Course Enrollment

Courses numbered 1-49 are primarily for freshmen, or freshmen and sophomores. Courses numbered 50-99 are ordinarily for sophomores, or sophomores and juniors. Courses numbered 100-199 are designed for juniors and seniors. Courses numbered 200-299 are planned for seniors and graduates. Courses numbered 300 up admit graduate students only. Courses numbered from 200 up are limited in enrollment to 25 students.

Minimum Enrollment Required for Courses

All courses are offered subject to minimum enrollments. The University reserves the right to withdraw undergraduate courses in which fewer than twelve students enroll, senior-graduate courses numbered 200-299 in which fewer than ten students enroll, and graduate courses and seminars numbered 300 or above in which fewer than six students enroll. In withdrawing a course, the University attempts to avoid undue hardships on students. Sometimes, therefore, courses are offered in spite of small enrollments. Courses not listed will be given when a demand develops and an instructor is available.

Department Officers and Regulations

Departments offering Summer Session programs are listed alphabetically. Under each department is given the name of the Chairman,

of the Director of Graduate Studies, and of the Director of Undergraduate Studies. Where departments have set up special regulations for admission to candidacy for the Master's degree, these are included.

Anatomy

Professor J. David Robertson, *Chairman* (401 Davison, West Campus); Professor John Buettner-Janusch, *Director of Graduate Studies* (Old Laundry Building, West Campus)

First Term

M151. *Anatomy of the Lower Extremities as it Relates to Locomotion.* 3 s.h. *Bassett*

Second Term

M151. *Anatomy of the Lower Extremities as it Relates to Locomotion.* 3 s.h. *Bassett*

Biochemistry

Professor Philip Handler, *Chairman* (Medical Sciences Building); Professor Kenneth S. McCarty (Medical Sciences Building), *Director of Graduate Studies*

First Term

S208. *Laboratory Methods in Biochemistry.* Prerequisite: Biochemistry 203, 303, and 308, or equivalent. 3 s.h. *Joshi*

Botany

Professor Terry W. Johnson, Jr., *Chairman* (354 Biological Sciences Building, West Campus); Associate Professor Robert L. Wilbur, *Director of Graduate Studies* (265 Biological Sciences Building, West Campus); Associate Professor Richard A. White, *Director of Undergraduate Studies* (371 Biological Sciences Building, West Campus)

Students admitted to candidacy for an advanced degree in botany should have completed a minimum of 12 semester hours of courses in botany (or biology) beyond an elementary course, and related work in biological sciences. Students who have not yet had the minimum hours, however, may enter higher courses by permission of the instructor, if he is convinced that they can carry the work for undergraduate credit, and may count such work toward hours necessary for candidacy.

First Term (Duke Campus)

225. *Special Problems.* Hours to be arranged. *Staff*
359. *Research.* Hours to be arranged. *Staff*

First Term (Duke Marine Laboratory, Beaufort, North Carolina)

211 (Beaufort). *Marine Phycology.* 6 s.h. *Searles*
225. *Special Problems.* Hours to be arranged. *Searles*
359. *Research.* Hours to be arranged. *Searles*

Second Term (Duke Campus)

226. *Special Problems.* Hours to be arranged. *Staff*
360. *Research.* Hours to be arranged. *Staff*

Second Term (Duke Marine Laboratory, Beaufort, North Carolina)

226. *Special Problems.* Hours to be arranged. *Wilbur*
360. *Research.* Hours to be arranged. *Wilbur*

Business Administration

Professor Louis D. Volpp, *Chairman* (302 Social Science Building, West Campus); Professor Thomas F. Keller, *Director of Graduate Studies* (203 Social Science Building, West Campus); Professor Robert L. Dickens, *Director of Undergraduate Studies* (113 Social Science Building)

First Term

59. *Managerial Accounting.* Economics 52. Not open to students who have taken B.A. 57, 58. 4 s.h. *Dickens*
138. *Business Statistics.* 3 s.h. *Dickens*

Chemistry

Professor Charles K. Bradsher, *Chairman* (101 New Chemistry Building, West Campus); Professor Louis D. Quin, *Director of Graduate Studies* (376 New Chemistry Building, West Campus); Associate Professor James F. Bonk, *Director of Undergraduate Studies* (213 New Chemistry Building, West Campus)

All classes in Chemistry, Term I, will begin on June 17 and continue through July 16. All classes in Chemistry, Term II, will begin on July 21 and continue through August 15. Students who wish to avoid paying a late registration fee must have their registration completed in advance of these dates. For registration dates see General Registration on page 35 of this *Bulletin*. (Chemistry classes will not meet on Saturdays.)

First Term

1. *General Inorganic Chemistry.* 4 s.h. *Palmer*

61. *Fundamentals of Analytical Chemistry.* Prerequisites: Chemistry 1-2 and Mathematics 21 or equivalent. 4 s.h. *Wilder*

151. *Organic Chemistry.* Prerequisite: Chemistry 61. 4 s.h. *Brown*

275. *Thesis Research.* Open to those students whose research programs for the A.M. and Ph.D. degrees have been approved by the department and by one of the instructors in charge of the course. Schedule to be arranged. (Not more than one semester hour of credit per week for full-time schedule or one semester hour each two weeks for half-time schedule.) 2 to 8 s.h. Available Terms I and II.

Second Term

2. *General Inorganic Chemistry.* Prerequisite: Chemistry 1. 4 s.h. *Bonk*

152. *Organic Chemistry.* Prerequisite: Chemistry 151. 4 s.h. *Vingiello*

Classical Studies

Professor Lawrence Richardson, Jr., *Chairman* (312 Carr Building, East Campus); Assistant Professor D. Keith Stanley, *Director of Undergraduate Studies* (324 Carr Building, East Campus)

Latin

First Term

111. *Roman Literature in English Translation I.* 3 s.h. *Womble*

112. *Roman Literature in English Translation II.* 3 s.h. *Womble*

Comparative Literature

First Term

191. *Independent Study.* Open only to qualified students in the junior year, by permission of the Department. 3 s.h. *Salinger*

193. *Independent Study.* Open only to qualified students in the senior year, by permission of the Department. 3 s.h. *Salinger*

205. *Foundations of Twentieth-Century European Literature.* 3 s.h. *Salinger*

Divinity School

Professor Robert E. Cushman, *Dean of the Divinity School* (124 Divinity School, West Campus)

First Term

277A. *Clinical Pastoral Education II.* 4 s.h. *Staff*

Economics

Professor John O. Blackburn, *Chairman* (302 Social Science Building, West Campus); Professor William P. Yohe, *Director of Graduate Studies* (313 Social Science Building, West Campus); Professor John M. Vernon, *Director of Undergraduate Studies* (201A Social Science Building, West Campus)

First Term

51. *Principles of Economics.* 3 s.h. *Davies*
153. *Money and Banking.* 3 s.h. *Staff*
287. *Public Finance.* 3 s.h. *Davies*

Second Term

52. *Principles of Economics.* 3 s.h. *Gillis*
154. *Aggregative Economics.* 3 s.h. *Gillis*

Education

Professor William H. Cartwright, *Chairman* (08D West Duke Building, East Campus); Professor Allan S. Hurlburt, *Director of Graduate Studies* (07 West Duke Building, East Campus); Professor Charles B. Johnson, *Director of Undergraduate Studies* (08B West Duke Building, East Campus)

Duke University is accredited by the National Council for Accreditation of Teacher Education for the preparation of elementary and secondary school teachers and school service personnel with the Doctor's degree as the highest degree approved.

For admission to candidacy for the Master of Arts (A.M.) degree with major in Education, or for the Master of Education (M.Ed.) degree, students must, in addition to meeting the general requirements for admission to the Graduate School, meet the following specific requirements: Credit for (1) eighteen semester hours of acceptable prior work in Education and (2) twelve semester hours of acceptable prior work in a minor

field. If psychology, sociology, economics, or political science is chosen for the minor, six semester hours of work completed after entering the junior year in college will be accepted.

The degree of Master of Arts is available in the divisions of School Administration and Supervision, Secondary Education, Elementary Education, and Guidance and Counseling. Every candidate for the Master of Arts degree in the Department should elect at least twelve semester hours in one of these divisions in which he plans to write his thesis and the remainder of his work, including the six semester hours in his minor, with the approval of the proper division adviser. The degree of Master of Education is available in the divisions of School Administration and Supervision, Secondary Education, Elementary Education and the Teaching of Emotionally Disturbed Children. Mr. Hurlburt, Mr. Pittillo and Mr. Sublett are advisers to students in School Administration and Supervision; Mr. Petty, Mr. Sublett and Mr. J. Johnson are advisers in Elementary Education; Mr. Cartwright, Mr. Githens, Mr. C. Johnson, and Mr. Shuman are advisers in Secondary Education; and Mr. Colver, Mr. Gehman, Mr. Ballantyne, and Mr. Weitz are advisers in Guidance and Counseling. Mr. Cartwright and Mr. Hurlburt are advisers for the Master of Arts in Teaching program. Candidates for the Master of Arts, Master of Education, or Master of Arts in Teaching degree should read with special care the regulations of the Graduate School as set forth on pages 4-13. Candidates for the Master of Arts in the field of guidance should consult the special brochure on guidance available from the Dean of the Graduate School.

It is the intention of the Department to make available to degree candidates all courses ordinarily required for certification as graduate teachers, counselors, principals and superintendents. These courses will normally be offered at least once every three years.

First Term

205. *Curriculum Problems in Secondary Education.* 3 s.h. *Cartwright*

207. *Social History of Twentieth Century American Education.* 3 s.h. *C. Johnson*

211. *The Problem Child (also Psychology 211).* 3 s.h. *I. Gehman*

225. *The Teaching of History and the Social Studies.* 3 s.h. *Cartwright*

226. *Teaching Reading in the Elementary School.* 3 s.h. *J. Johnson*

229. *Formal and Informal Classroom Diagnosis of Reading Disability Cases.* 3 s.h. *J. Johnson*

234. *Secondary-School Organization and Administration.* 3 s.h. *Pittillo*

243. *Personality Dynamics.* Prerequisite: 6 hours of psychology or educational psychology. 3 s.h. *S. Gehman*

246. *The Teaching of Mathematics.* 3 s.h. *Reynolds*

250, 251. *Teaching Emotionally Disturbed Children: Internship.* 3 s.h. each. *S. Gehman*

276. *The Teaching of High-School Science.* 3 s.h. *Githens*

315. *Seminar in Secondary-School Teaching.* For students without previous internship credit, this course must be accompanied by Education 216.

323. *Public School Finance.* 3 s.h. *Pittillo*

332. *Supervision of Instruction.* 3 s.h. *Hurlburt*

Second Term

213. *Elementary-School Organization and Administration.* 3 s.h. *Sublett*

217. *The Psychological Principles of Education.* 3 s.h. *Katzenmeyer*

221. *Programs in Early Childhood Education.* 3 s.h. *Flowers*

223. *Teaching the Language Arts.* 3 s.h. *Flowers*

233. *Improvement of Instruction in English.* 3 s.h. *Shuman*

237. *The Teaching of Literature in Secondary Schools.* 3 s.h. *Shuman*

253. *Law and Education.* 3 s.h. *Martin*

260. *Introduction to Educational Research.* 3 s.h. *Katzenmeyer*

339. *Seminar in Curriculum.* 3 s.h. *Sublett*

Engineering

Professor J. L. Meriam, *Dean of the School of Engineering* (136 Engineering Building, West Campus); Associate Professor E. K. Kraybill, *Associate Dean of Undergraduate Studies* (136 Engineering Building, West Campus)

First Term

C.E. 365. **Advanced Topics in Civil Engineering.* 1 to 3 s.h. *Graduate Staff*

C.E. 399. **Special Readings in Civil Engineering.* Prerequisite: approval of the Director of Graduate Studies. 1 to 3 s.h. *Graduate Staff*

E.E. 265. **Advanced Topics in Electrical Engineering.* Prerequisite: approval of the Director of Graduate Studies and of instructor under whom work will be done. 1 to 3 s.h. *Graduate Staff*

E.E. 399. **Special Readings in Electrical Engineering.* Prerequisite: approval of the Director of Graduate Studies. 1 to 3 s.h. *Graduate Staff*

M.E. 197-198. **Projects in Mechanical Engineering.* Prerequisite: 3.0 average and senior standing. 1-6 s.h. *Staff*

M.E. 265. **Advanced Topics in Mechanical Engineering.* Prerequisite: approval of the Director of Graduate Studies and of instructor under whom work will be done. 1 to 3 s.h. *Graduate Staff*

M.E. 399. **Special Readings in Mechanical Engineering.* Prerequisite: approval of the Director of Graduate Studies. 1 to 3 s.h. *Graduate Staff*

English

Professor Oliver Ferguson, *Chairman* (325 Allen Building, West Campus); Professor Holger Nygard, *Director of Graduate Studies* (321 Allen Building);* Professor George Williams, *Director of Undergraduate Studies* (402 Allen Building, West Campus)

Candidates for the Master's degree in English are expected to have had at least eighteen semester hours in undergraduate courses above the sophomore level. The Department may also require additional courses if the work of the student in his first term indicates inadequate preparation.

*Professor Lionel Stevenson will act as Director of Graduate Studies in Term II.

First Term

55. *Representative British Writers.* 3 s.h. *Butters*
57. *Representative American Writers.* 3 s.h. *Jones*
176. *American Literature since 1915.* 3 s.h. *Clum*
209. *Present-Day English.* 3 s.h. *Nygard*
213. *Introduction to Folklore.* 3 s.h. *Nygard*
230. *American Literature, 1800-1865.* 3 s.h. *Jones*
252. *English Literature in the Seventeenth Century.* 3 s.h. *Jackson*
322. *Studies in Twentieth-Century American Literature.* 3 s.h. *Duffey*

Second Term

56. *Representative British Writers.* 3 s.h. *Mellown*
58. *Representative American Writers.* 3 s.h. *Anderson*
129. *The English Novel in the Twentieth Century.* 3 s.h. *Smith*
222. *English Literature of the Early Nineteenth Century.* 3 s.h. *Stevenson*
236. *American Literature Since 1920.* 3 s.h. *Strandberg*
261. *English Literature of the Twentieth Century.* 3 s.h. *Smith*
347. *Studies in Victorian Poetry.* 3 s.h. *Stevenson*

Forestry

Professor Charles W. Ralston, *Dean of the School of Forestry* (213 Biological Sciences Building, West Campus); Associate Professor Kenneth R. Knoerr, *Director of Graduate Studies* (309 Biological Sciences Building, West Campus)

Qualified students may engage in thesis research in certain branches of forestry during the Summer Session with the approval of the instructor

* Offered only upon sufficient demand; enrollment limited.

concerned and the Dean of the School of Forestry, or of the Director of Graduate Studies in the case of work taken through the Graduate School.

357. *Research in Forestry.* Open to students whose research programs for the M.F. or D.F. degree have been approved by the Dean of the School of Forestry and the instructor responsible for directing the research and whose programs for the A.M., M.S., or Ph.D. degree have been approved by the Director of Graduate Studies and the instructor in charge. 2 to 12 s.h. (Consult courses 301-302 in the *Bulletin of the School of Forestry* for letter designation of branches of forestry in which research is to be conducted.) *Staff*

Geology

Associate Professor S. Duncan Heron, Jr., *Chairman* (119 Science Building, East Campus); Associate Professor Orrin H. Pilkey, *Director of Graduate Studies* (05 Science Building, East Campus); Associate Professor William J. Furbish, *Director of Undergraduate Studies* (104 Science Building, East Campus)

The class in Geology 1, Term I, will begin on June 17 and continue through July 16. The class in Geology 2, Term II, will begin on July 21 and continue through August 15. Students who wish to avoid paying a late registration fee must have their registration completed in advance of these dates. For registration dates see *General Registration* on page 35 of this *Bulletin*. (Geology classes will not meet on Saturdays.)

First Term

1. *Physical Geology.* 4 s.h. *Heron*

204 (Beaufort). *Physical Oceanography.* 6 s.h. *Blanton*

Second Term

2. *Historical Geology.* 4 s.h. *Lynts*

205 (Beaufort). *Geological Oceanography.* This course is not open to students who have completed Geology 206. 6 s.h. *Pilkey*

German

Professor Herman Salinger, *Chairman and Director of Graduate Studies* (106 Language Building, West Campus); Lecturer Helga Bessent, *Director of Undergraduate Studies* (02 Language Building, West Campus)

First Term

1. *Elementary German.* 4 s.h. *Bessent*

63. *Intermediate German.* Prerequisite: German 1-2, or two units of high-school German. 3 s.h. *Romero*

64. *Intermediate German.* Prerequisite: German 63 which may be taken concurrently. 3 s.h. *Krebs*

191. *Independent Study.* Open only to qualified students in the junior year by permission of the Department. 3 s.h. *Salinger*

193. *Independent Study.* Open only to qualified students in the senior year by permission of the Department. 3 s.h. *Salinger*

Graduate Reading Course. No degree credit. *Klabes*

Second Term

2. *Elementary German.* 4 s.h. *Boletta*

Health and Physical Education

Edmund M. Cameron, *Director, Trinity College and College of Engineering* (109 Indoor Stadium, West Campus); Professor J. A. Friedrich, *Chairman, Health and Physical Education* (107 Card Gymnasium, West Campus)

First Term

PE 182. *The Administration of Health and Physical Education in Secondary Schools.* 3 s.h. *Davis*

PE 190. *Protective Practices in Physical Education.* 3 s.h. *Davis*

History

Professor Joel Colton, *Chairman* (235 Allen Building, West Campus); Professor Robert F. Durden, *Director of Graduate Studies* (230 Allen Building, West Campus); Associate Professor Charles R. Young, *Director of Undergraduate Studies* (102 West Duke Building, East Campus)

For admission to candidacy for a Master's degree in History, the student must present a total of twelve semester hours of prior work in History, of which at least six must be in American History if he plans to take his major work in that field. Candidates for the degrees of Master of Arts and Master of Arts in Teaching are required to complete at least three hours of seminar work and are strongly urged to enroll for this work after they have attended one Summer Session term. (See courses numbered 300 or above.)

First Term

51. *A History of European Civilization.* 3 s.h. *Krantz*
91. *The Development of American Democracy to 1865.* 3 s.h. *TePaske*
205. *The United States in the Twentieth Century.* 3 s.h. *Mrs. Mathews*
266. *Modern South America.* 3 s.h. *TePaske*
288. *History of Modern Japan.* 3 s.h. *Silberman*
295. *Recent Interpretations of Ancient and Medieval History.* 3 s.h. *Young*
301. *Seminar in Historical Investigation.* 3 s.h. *Young*

Second Term

52. *A History of European Civilization.* 3 s.h. *Rainey*
92. *The Development of American Democracy, 1865 to the Present.* 3 s.h. *Mrs. Mathews*
115. *History of Africa to 1850.* 3 s.h. *Graham*
220. *History of the Negro in the United States.* 3 s.h. *Thorpe*
243. *East Africa Since 1800.* 3 s.h. *Kiwanuka*
244. *Colloquium-Seminar in African Studies.* 3 s.h. *Kiwanuka and Graham*
302. *Seminar in Historical Investigation.* 3 s.h. *Ferguson*

Hospital Administration

Professor Charles H. Frenzel, *Director of the Graduate Program in Hospital Administration* (234B Baker House); Assistant Professor Donald S. Smith, II, *Coordinator of Graduate Studies* (234B Baker House)

Second Term

201. *History and Development of Hospitals and Other Health Agencies.* 3 s.h. *Smith*

Mathematics

Professor Seth L. Warner, *Chairman* (135 Physics Building, West Campus); Associate Professor David A. Smith, *Director of Graduate Studies* (135 Physics Building, West Campus); Professor Francis G. Dressel, *Director of Undergraduate Studies* (135 Physics Building, West Campus)

First Term

21. *Introductory Calculus.* Prerequisite: two and one-half units of college preparatory mathematics. 3 s.h. *Staff*

51. *Introduction to Digital Computation.* Prerequisite: three units of college preparatory mathematics. 3 s.h. *Henson*

217. *Intermediate Analysis.* Prerequisite: Mathematics 63. 3 s.h. *Hodel*

293. *Multivariate Statistics.* Prerequisite: Mathematics 284, or consent of the instructor. 3 s.h. *Burdick*

391. *Partially Ordered Vector Spaces.* Prerequisite: Mathematics 292 or consent of the instructor. 3 s.h. *Moore*

Second Term

22. *Introductory Calculus.* Prerequisite: Mathematics 21. 3 s.h. *staff*

218. *Intermediate Analysis.* Continuity, differentiation, integration. Prerequisite: Mathematics 217. 3 s.h. *Staff*

227. *Theory of Numbers.* Prerequisite: Mathematics 63. 3 s.h. *Scoville*

394. *Topological Rings.* Prerequisite: Mathematics 236 and 272. 3 s.h. *Warner*

Mathematics and Science Institute

Botany 213. *Survey of Modern Botany I.* 3 s.h. (graduate)
Botany 235, 236. *Field Botany.* 6 s.h. (graduate)
Chemistry 213. *Advanced Chemistry for Teachers.* 3 s.h. (graduate)
Chemistry 253. *Intermediate Organic Chemistry.* 3 s.h. (graduate)
Mathematics 204. *Geometry for Teachers.* 3 s.h. (graduate)
Mathematics 216. *Intermediate Analysis.* 3 s.h. (graduate)
Mathematics 224. *Statistics.* 3 s.h. (graduate)
Physics 161. *Modern Physics.* 3 s.h.*

Physical Science Institute

Physical Science 201. *Physical and Electrical Phenomena.* 3 s.h. (graduate)

Physical Science 202. *Chemical Properties, Substances, and Reactions* 3 s.h. (graduate)

Microbiology

325. *Medical Mycology.* 4 s.h. *Conant*

Pathology

Professor Thomas D. Kinney, *Chairman* (M301, Davison, West Campus); Professor Benjamin F. Trump, *Director of Graduate Studies* (M263, Davison, West Campus)

* Six s.h. of 100-level work may be counted toward the M.A.T. degree.

First Term

M 357. *Research.* Hours to be arranged. *Staff*
M 361. *Advanced General Pathology.* 6 s.h. *Rowlands*
M 363. *Seminar in Electron Microscopy.* 1 s.h. *Trump*

Second Term

M 357. *Research.*
M 362. *Second part of M 361. Advanced General Pathology.*
M 363. *Seminar in Electron Microscopy.*

Philosophy

Professor Paul Welsh, *Chairman* (203D West Duke Building, East Campus); Professor W. Bernard Peach, *Director of Graduate Studies* (201B West Duke Building, East Campus); Professor N. L. Wilson, *Director of Undergraduate Studies* (201C West Duke Building, East Campus)

First Term

42. *Knowledge, Fact, and Value.* 3 s.h. *Aquila*
94. *History of Philosophy: Modern.* 3 s.h. *Aquila*

Second Term

48. *Logic.* 3 s.h. *Welsh*
117. *Ancient and Modern Ethical Theories.* 3 s.h. *Welsh*

Physics

Professor Henry A. Fairbank, *Chairman* (118 Physics Building, West Campus); Professor Lawrence E. Evans, *Director of Graduate Studies* (213 Physics Building, West Campus); Professor Horst Meyer, *Director of Undergraduate Studies* (0028 Physics Building, West Campus)

Classes in Physics 51, Term I, will begin on June 17 and continue through July 16. Classes in Physics 52, Term II, will begin July 21 and continue through August 15. Students who wish to avoid paying a late registration fee must have their registration completed in advance of these dates. For registration dates see General Registration on page 35 of this *Bulletin.* (Physics classes will not meet on Saturdays.)

First Term

51. *General Physics.* Prerequisites: Mathematics 21, 22 or equivalent. 4 s.h. *Carpenter and Wheeler*
353X. *Thesis Seminar.* Credits to be arranged. *Staff*

Second Term

52. *General Physics.* Prerequisite: Physics 51. 4 s.h. *Carpenter and Wheeler*

Political Science

Professor John H. Hallowell, *Chairman* (307 Library, West Campus); Professor J. Harris Proctor, *Director of Graduate Studies* (103 Carr, East Campus and 303 Library, West Campus); Associate Professor Samuel D. Cook, *Director of Undergraduate Studies* (309 Library, West Campus)

First Term

61. *The American Political System.* 3 s.h. *Leach*
231. *American Political Theory.* 3 s.h. *Leach*

Second Term

164. *Government Regulatory Policy and Administration.* 3 s.h. *Thomas*
230. *American Political Institutions.* 3 s.h. *Thomas*

Psychology

Professor Irving E. Alexander, *Chairman* (224 Building 9, West Campus); Associate Professor Gregory R. Lockhead, *Director of Graduate Studies* (242 Building 9, West Campus); Associate Professor Cliff W. Wing, Jr., *Director of Undergraduate Studies* (316 Building 9, West Campus)

Details concerning the program in studies in Psychology may be obtained from the Director of Graduate Studies in Psychology.

First Term

91. *Introductory Psychology.* 3 s.h. *Guttman*
141. *Personality and Behavior Disorder.* Prerequisite: Psychology 100. 3 s.h. *Costanzo*
211. *The Problem Child (Also Education 211).* 3 s.h. *I. Gehman*
232. *Personality and Physical Handicap.* 3 s.h. *Huse*
303. *Research.* Credits to be arranged. *Staff*

Second Term

100. *Personality.* 3 s.h. *Costanzo*
304. *Research.* Credits to be arranged. *Staff*

Religion

Professor Thomas A. Langford, *Chairman* (118 Gray Building, West Campus); Professor Waldo Beach, *Director of Graduate Studies* (209 Divinity School, West Campus); Professor J. H. Phillips, *Director of Undergraduate Studies* (117 Gray Building, West Campus)

First Term

51. *The English Bible.* 3 s.h. *Pearson*
55. *The Religion of the Bible.* 3 s.h. *Langford*
123. *The Life and Letters of Paul.* 3 s.h. *Pearson*
152. *Christian Ethics.* Not open to students who have received credit for Religion 85. 3 s.h. *McCollough*

Second Term

52. *The English Bible.* Not open to freshmen, or to students who have received credit for Religion 2. 3 s.h. *Osborn*
93. *Survey of the World's Living Religions.* Prerequisite: Religion 55. Not open to students who have completed the uniform course requirements in religion. 3 s.h. *Ricketts*
137. *Christianity in America.* 3 s.h. *Jones*
149. *Current Interpretations of Christianity.* 3 s.h. *Osborn*

Romance Languages

Professor John Fein, *Chairman* (205 Building 5, West Campus); Associate Professor Thomas H. Cordle, *Director of Graduate Studies* (303 Building 5, West Campus)

French

First Term

1. *Elementary French.* 4 s.h. *Tate*
63. *Intermediate French.* Prerequisite: French 1-2 or two years of high-school French. 4 s.h. *Ripley*

Second Term

2. *Elementary French.* 4 s.h. *Hull*
64. *Intermediate French.* 4 s.h. *Bryan*

Spanish

First Term

1. *Elementary Spanish.* 4 s.h. *Fein*

63. *Intermediate Spanish.* Prerequisite: Spanish 1-2 or two years of high-school Spanish. 4 s.h. *Jackson*

Second Term

2. *Elementary Spanish.* 4 s.h. *Murray*

64. *Intermediate Spanish.* 4 s.h. *Torre*

Slavic Languages and Literatures

Associate Professor Magnus J. Krynski, *Chairman* (314 Language Building, West Campus)

First Term

1. *Elementary Russian.* 4 s.h. *H. Pavlov*

63. *Intermediate Russian.* Prerequisite: Russian 1-2 or 2 years high school Russian. 4 s.h. *M. Pavlov*

191. *Independent Study.* Open only to highly qualified students by permission of the Department. 6 s.h. *M. Pavlov*

Second Term

2. *Elementary Russian.* 4 s.h. *Jezierski*

64. *Intermediate Russian.* Prerequisite: Russian 1-2 or 2 years high school Russian. 4 s.h. *Staff*

192. *Independent Study.* Open only to highly qualified students by permission of the Department. 6 s.h. *Jezierski*

Sociology and Anthropology

Professor John C. McKinney, *Chairman* (2681 Building 9, West Campus); Professor Joel Smith, *Director of Graduate Studies* (332 Building 9, West Campus); Associate Professor Donald F. Roy, *Director of Undergraduate Studies* (273 Building 9, West Campus)

The Department of Sociology offers graduate work leading to the A.M. and Ph.D. degrees. Before undertaking advanced work in this Department, a student must have completed a minimum of 12 semester hours of approved preliminary courses in the field, and 12 additional semester hours in the field or in related work. A student who is deficient in the

minimum required work will be asked to take additional undergraduate courses agreed upon in conference with the Director of Graduate Studies.

Candidates for advanced degrees in sociology usually take minor work in psychology, economics, political science, education, history, or religion. Detailed requirements for the minor work, and for majors in other departments who wish to present sociology as minor work, may be obtained from the Director of Graduate Studies.

Sociology

First Term

91. *Introduction to Sociology: Concepts and Procedures.* Open to freshmen. 3 s.h. *Boyd*

241. *Social Stratification.* 3 s.h. *Borinski*

253. *Social Institutions.* 3 s.h. *Borinski*

Second Term

145. *Urban Sociology.* 3 s.h. *McAllister*

243. *Population Dynamics and Social Change.* 3 s.h. *Drake*

255. *Race and Culture.* 3 s.h. *Drake*

Anthropology

First Term

93. *General Anthropology.* 3 s.h. *Thompson*

Second Term

94. *Cultural Anthropology.* 3 s.h. *Huber*

Zoology

Professor Edward C. Horn, *Chairman* (227 Biological Sciences Building, West Campus); Professor John R. Gregg, *Director of Graduate Studies* (047 Biological Sciences Building, West Campus); Assistant Professor Roger W. Doyle, *Director of Undergraduate Studies* (337 Biological Sciences Building, West Campus)

All classes in Zoology are offered at the Duke University Marine Laboratory at Beaufort, North Carolina (Term I, June 10-July 16; Term II, July 18-August 23). Students who wish to avoid paying a late registration fee must have their registration completed in advance of these dates. For registration dates see General Registration, page 35 of this *Bulletin*. For detailed instructions and further information on these offerings see the *Bulletin of the Duke University Marine Laboratory*.

To undertake study toward an advanced degree in Zoology, a student

should have completed an undergraduate major in zoology or its equivalent. This normally amounts to twenty-four or more hours of course work distributed among various fields of zoology. The Department recognizes the trend in modern biology towards interdisciplinary research, and part of the zoology requirements may be replaced by advanced work in chemistry, mathematics, physics, etc.

Required work for the A.M. degree ordinarily includes twelve units of advanced course work in Zoology, six units of course work in a minor department, and an additional six units of advanced course work in the major or minor department, or in other pertinent departments. Furthermore, an acceptable thesis is necessary for the fulfillment of the degree requirements.

Candidates for the Ph.D. degree are expected to be broadly trained zoologists. The program of each candidate is determined by a committee which reviews previous training and sets the specific requirements to be made. Normally the program includes graduate courses in several fields of zoology, courses in the minor subject, wide reading in science in general and in biology in particular, research, and dissertation based on original work. Minor work is available in many fields, including anatomy, biochemistry, botany, chemistry, physics, physiology, and psychology.

First Term (Durham Campus)

353. *Research.* 2-6 s.h. *Staff*

First Term (Duke Marine Laboratory, Beaufort)

203. *Marine Ecology.* 6 s.h. *Boaden*

214. *Biological Oceanography.* Prerequisites: a course in invertebrate zoology, ecology, marine biology or an appropriate equivalent; chemistry through organic; one year of physics and mathematics. 6 s.h. *McGowan*

353. *Research.* 2-6. *Staff*

Second Term (Durham Campus)

354. *Research.* 2-6. *Staff*

Second Term (Duke Marine Laboratory, Beaufort)

240. *Chemical Oceanography.* Prerequisites: one year of physics, mathematics through calculus, a year of analytical chemistry or physical chemistry; an introductory course in general oceanography or a course in physical oceanography or permission of the instructor. 6 s.h. *Stefansson*

250. *Physiological Ecology of Marine Animals.* Prerequisite: Zoology 151 or equivalent. 6 s.h. *Vernberg*

274. *Marine Invertebrate Zoology.* 6 s.h. *Naylor*

354. *Research.* 2-6 s.h. *Staff*

Appendix

Degrees and Honors

Degrees Awarded June 2, 1969

Bachelor of Arts

David Dixon Abdella
Lee William Adams
Margaret Montgomery Adams
Mary Eleanor Adams
Bonlyn Elizabeth Agan
Kenneth George Ahrens
Nancy Aikens
James Carl Alley
John Stephen Alterman
Ellen Few Anderson
H. Russell Anderson, III
Andrea Rebecca Andrews
Charles Imlay Appler
William McCauley Arnold
Jane Ellen Ashcraft
Kathleen May Ashley
Randall Evan Auryansen
Judith Evelyn Badenhoop
Marcia Lynn Bages
David Jackson Bailey
Michael Charles Balog
Roland Taylor Barnhardt
Samuel Letcher Barton
Richard C. Bate, Jr.
Guy Phillip Bates, Jr.
Marjorie Adams Beaird
William Lee Beasley, III
Marjorie Dew Bekaert
Allan Edward Bellman
Francis Anthony Beninati
Gordon E. Berman
Walter Ray Berman
Philip Moorhouse Best
Neil Allen Big
Bert Binder
David Keehn Birkhead
Kristin Ann Birkness
Kathryn Ann Bisgard
Linda L. Black
Alice Cain Blackmore
Tuppence Helen Blackwell
James Randolph Blanchard, Jr
Robert Lee Blaney
Neill James Blue, Jr.
Wayne Michael Boaz
Bonnie-Leigh Boehm
Rebecca Lou Bogard
Robert Highman Booth, Jr.
Michael Richard Borasky
Iris Daye Bordeaux
Frances Joyce Borders
Sharon Vanderburg Bost
Louis Keith Boswell, III
Peter Bruce Boswell
Gregory John Bowcott
Deborah Lane Bowers
Richard Coleman Boyd
Alfred Orman Bragg, III
Joan Long Brannon
Mark Kevin Branse
John Lawrence Brasher
Susan Maxine Brecht

Robert Stephen Brent
Barbara Ann Bressman
Nancy Brewer
Barrie Lewis Bridgers
Wayne Allan Bromfield
Albert Michael Bronson
Stephen Charles Brooks
Jack Gaughf Brown
Joy Anne Brown
Pamela Lane Brown
Paul Dean Brown
Peter Coleman Buck
Barbara Clare Buerger
Rebecca Hetty Burgess
Bertie Nelson Butts, III
George Warren Byrne, Jr.
Robert Thomas Cadwallader, Jr.
James David Cahill, Jr.
Joseph William Calabrese
Marnite Barnhardt Calder
John Leo Call, Jr.
Richard Thomas Calvin
Walter Kent Canipe
Marc M. Caplan
Lee Evan Caplin
Carolyn Elizabeth Carder
Nancy Lee Cardwell
Mary Linda Carmichael
Kenneth Gene Carpenter
Lucile Snowden Carter
Janice Kathryn Cary
Walter Tribble Chapin
Warren Arthur Chapman
Linda J. Chase
Calvin Locke Chrisman
Clorinda Chunn
Carolyn Johnston Clark
Theodosia Dargan Clark
Thomas Carlyle Clark
Tad Robert Clawson
Guy Del Clifton
Charles Thomas Clotfelter
Linda Jean Cobb
Anna Bess Coble
Katherine Bette Coe
Charles Colbrunn
Barbara Ann Colburn
Stephan Wayne Conaway
Robert Stephen Conker
Elaine Louise Conner
John William Coogan, Jr.
Darby Lee Cook
Bruce Edward Cooke
Judith Carol Copeland
William Andrew Copenhaver
Dorian H. Coppenhaver
George Nassiff Corey
Paul Lee Couch
Sally Cozart Council
William Axford Cozzens
Alice May Craft
Katherine Alyce Crane
John Carr Crawford
Robert Boggs Creamer
William Penn Croom, Jr.
Carol Anderson Crosby
Virginia Sharpless Crosson
Janice Laverne Crowder
Richard Frederick Crowder
Vera Hopkins Cudlin
John Pierce Culver, III
Katharine Garrett Cunning
Mary Carolyn Currie
Joan Walker Curry
Judith May Curtis
Patsy Melanie Cushing
Robert Berry Daane
John Dale, IV
Dianne Elizabeth Dame
Suzanne Patricia Dame
David Oscar Daniel, III
Margaret Jeane Danielson
Judy Ann Darr
Susan Posey Daugherty
Charles Reems Daul
Wesley S. Davis, Jr.
Marianne L. Day
Alan Nicholas DeCarlo
Edith Bachelor DeMik
Harry Edward DeMik
Lawrence Howard Dempsey, Jr.
Ernest Gordon DePuey, III
Jack Westmoreland Derryberry, Jr.
Sean Patrick Devereux
Anne-Marie Dickinson
Robert Marshall Dickman
Stephen Boyd Dobson
Robert P. Dolian
Mary Ardeen Donker
Carol Dornseif
James Ray Dover, Jr.
Kelly Thomas Drake
James F. Dubuar
Diana Louise Duckworth
Thomas Arrington Duke
Ruth McKinley Dulaney
Charles Wimberley Dunn
Joseph Ellison Dye

Mary Louise Dysart
Phyllis Mae Eagan
Ann Elizabeth Earnhardt
Willard Leland Eckhardt, Jr.
Gary Ernest Eckstine
Catherine Sue Edwards
Craig Edward Eisenacher
James Wiley Ellett
David Upshur Elliott, Jr.
Susan Elizabeth Ellis
John David Englar
Peter Calvin English
William Robert Erwin
James Harrison Eskridge, Jr.
Nancy Elizabeth Evans
Mary Etta Eyler
Sheila Miriam Fabricant
George Reed Failing, Jr.
Deborah Fain
Ernest Easterby Ferguson
Martha Miller Feuchter
Julia Davis Field
Phillip Randolph Finch
William Ratliff Finger
John David Fisher
Leslie Raymond Fleischer
Brenda Elaine Fletcher
Camilla Williams Foland
Linda Mosher Fondren
Nelson McCain Ford
Jean Suzanne Foster
Susan Scott Fox
Robert Dean Francis
Grady Craven Frank, Jr.
Earl Ruffin Franklin, Jr.
Douglas Melvin Franks
James T. Friedland
Laurence Layton Funk
Edward Alexander Gabel
Gloria Joan Garrett
Wayne Montague Garrett
William Davis Garrison
Virginia Morse Garvin
Mary Kathe Gates
Catherine Lee Gaylord
Margaret Elizabeth Gee
Cynthia Gentithes
Ann Gerald
Herbert Martin Gibson, Jr.
Linda Gilchrist
Donna Lee Giles
Patricia Mary Giordano
Mark Paul Gitomer
Claiborne Van Cortlandt Glover, III
Miriam Anne Glover
Herbert Lee Goins, Jr.
Edythe Joan Goldstein
Lee Allan Goodman
William Wolcott Goodrich, Jr.
W. Charles Grace
John Edward Grauerholz
Glen Burton Gray
Jo Ann Green
Mary Fulton Green
Philip Burton Green
Walter Guerry Green, III
James Bain Greene
Linda Jean Gregory
James Michael Grimwood
Marian Harris Grogan
Mary Lucile Gruy
William Dillard Gudger
Gloria Jean Anne Guth
Charles H. Guy, III
Frederick Courtland Hack, Jr.
Douglas J. Haggar
Samuel Theodore Hall
Laurie Anne Halliday
David Northmore Hamill
Martha Jon Hamill
John Blackledge Hamilton
Ellen Page Hancock
Lucy Hanson
Carol Sue Hargan
Haywood Stephen Harrell
Frances Ellen Harris
Stephen Kelly Harris
Velma Gray Harrison
Joseph Dane Hartgrove
Nancy Strong Harvey
Kristi Marie Hasskamp
Mark Jay Hauser
Cynthia Jean Havens
Frances Perry Hays
Kenneth Martin Heckert
Susan Gwen Heidtman
Maurice Henkin, Jr.
Charlotte Ann Henley
Frederick Edward Henry, III
Robert Alexander Herrin
Margaret VanDyke Hess
John Robert Hiatt
Thomas Decatur Hibler, Jr.
Edward Millard Hicklin, Jr.
Donna Jean Hicks
David Martin Hillenbrand
George Joseph Hillow, III
Marc R. Hillson

Robert Sawyer Hodgman
Arthur Everett Hoeg, III
Linda Carol Hoffner
Kristina Moeller Hokanson
Quinn G. Hollomon
Volney Mason Holmes, Jr.
Julie Bergren Holmquist
Dallas Kern Holoman
Lynn Holzapple
Kenneth Joseph Homa
Jane Wiltshire Hoover
Charles William Hopkins
Bruce Maclachlan Horack
Kathy Méline Horn
Vangie Maxine Horton
Gary Alan Horvitz
Andrea Rae Horwich
Robert Haywood Hosea
Margaret Howard
Patrick McCain Hughey
Jerry Barnes Hunt
Susan Lanier Hurst
Michael Saul Insel
George S. Irby, III
Margaret Dallas Jackson
Ivan H. Jacobs
Glenn Craig Jacobsen
Edyth MacMillan James
Lila Jenkins
Jerri Lee Jennings
Karen Elizabeth Joerg
Brooks Steven Johnson
Carl Anderson Johnson
Deborah Diane Johnson
Harold Allen Johnson
Janis Johnson
Joan Ellen Johnson
Jeffrey Walter Johnson
Judy Lea Johnson
Marcia Helen Johnson
Marjorie Mae Johnson
Melvin Julius Johnson, III
Michael Scott Johnson
Rebecca Kay Johnson
Samuel Warren Johnson
Sue Stromberg Johnson
Stephen Thomas Johnston
Quenlan Madison Jones
Ross Erwin Jones
William C. Jones
David Michael Jordan
Joseph Elbert Jordan, Jr.
Nina Carolyn Kamlukin
Susan Elizabeth Kane
Michael Jonathan Kaper
Stephen Arthur Kase
Sandra Sue Kavanaugh
Jefferson James Kaye
William Mellon Keenan, Jr.
Peter Walter Kellen
Mary Jane Kellett
James Jeremy Kennedy, Jr.
Richard Henry Kent
Stephen Alan Kern
Michael Hawley Kerr
Craig Martin Kessler
James Ernest Kidd, Jr.
Joseph Woodman Kimmell, II
Eleanor DeArman Kinney
Sandra Hope Kisner
Jeffrey J. Klein
Vivian Patricia Klutz
Judith Elizabeth Kneipp
Arthur Winfield Knight, Jr.
Cheryl Ann Kohl
James R. Koonce
Kenneth S. Kornman
Lee Sober Korschun
John Reed Kramer
John Edward Krampf
Ellen Katherine Kuhn
William Brownlow Kurtz, Jr.
Alfred Judd Lacy, Jr.
Philip Tolbert Lacy
Elizabeth Stites Lamason
Steven Charles Lambert
Michael Roy Landau
Regina Stroh Lang
Thomas Wingate Lassiter
Roland Marcus Leath
Arthur Bowen Leavens, III
Richard Hardy Lee
Gregory Kenneth Lehne
Michael P. Leiter
Linda Himadi Lenz
John Hunter LeSueur, Jr.
Joseph Andrew Levine
Walter Joseph Levy, Jr.
Richard Bruce Lieb
Robert Sherwood Lilien
Francis Xavier Lilly
Frederick Gustave Lind
Alayne Kay Livingston
Marshall Owens Lloyd
Lawrence Ross Long
Randolph Rogers Lore
Eric W. Lothman
Carol Ann Loudermilk

James Lynn Lowder
Ingrid Ellen Lund
Richard H. Lundholm
Alexander Tate MacIntosh
Angus Neil MacIvor
Marcia Sue Mahaffey
Karen Anne Maher
John Wallace Malley, Jr.
Robert Wilson Maloney
Jo Ella Manalan
John Marshall Mangan
John Anthony Manger, Jr.
Sally Nelson Mann
James Russell Margolin
Jeremiah Richard Marion, III
John Robert Markel
Marilyn Louise Martin
Robert Shaver Martin
Lucille Knox Mason
Anna Rebekah Matthews
Marvin Miles Matthews
Elizabeth Carolyn May
Sheryl Lynn Mayfield
Amanda Sue McBride
Samuel Gault McCaskill, Jr.
David Edward McClain
Carolyn Cody McClatchey
William Mann McClatchey
George James McClellan, Jr.
Ellen Kay McCool
Martha Mossman McDonald
Rhoda Jane McGraw
Donna Sue McLellan
Robert Graham McMillan
Martha Jean McVay
Martha Terry Mechling
Charles Stanton Meek
John Akin Melville
Kathryn Ann Mettelka
James Louis Metz
Joseph Patrick Metz
Richard Harold Metz
Alma Rosetta Mickens
Craig Stephen Miller
Sally Elizabeth Miller
Betty Benton Milspaw
David Arthur Minckler
Lyndon Charles Molzahn
Sandra Emerson Monsman
Kathleen Bryson Moore
Diane Stone Mordaunt
Kenneth Barry Morgan
Robert Thomas Morgan
Jack Osborn Morse
Barry Nelson Mowbray
Sylvia Ann Mullis
Christopher Page Murkland
Stephen Chivvis Murphy
Lauren Ruth Murray
Orrin Roberts Musser
Berlin George Myers, Jr.
Francis Enoch Myers, IV
Sally Avery Nathan
Mary Ann Naumuk
Joseph Walter Neal, III
Glenn Edwin Newman
Nancy Nix
Sharyn Ann Nixon
Russell Ann Nobles
James Jay Nomina
Reginald Wade Norris
William Dale Norton
Mary Jane O'Brien
John Francis Ogburn, III
Cheryl Lee Oetter
Victor Manning Oliver
George Edgar Olson, III
John William Olson
Nancy Jeanne O'Neal
Morton Carl Orman
David Kenneth Osberg
Roger Harold Ostdahl
Alan Henry Otte
James Lawrence Oyster
Vernon M. Padgett, Jr.
Bert Edward Park
Kathleen J. Parker
Marlie Sue Parker
Merrie Parkyns
R. Wayne Parrish
William Thomas Parrott, III
Lawrence Coe Parthum
S. J. Patch, Jr.
Mary Priscilla Peake
Donald Wayne Pearce
Diane Lynne Pearson
Paul C. Pearson, III
Sally Munroe Peden
Ruth Elizabeth Peeler
James Marvin Peeples
Robert Jon Perchan
Elizabeth Ann Perry
Gregory Brooks Perry
Henry Baker Perry, III
Susan Worthington Perry
Janet Martha Phillips
John Richard Pieklik
Hannah Lee Pierce

David Alan Poleski
Roger Allen Pond
Cynthia Rush Preston
W. Sears Prindle
Andrew Walter Prout, III
Barbara Lee Puls
Frederick Ross Pultz
Douglas Stanley Pulver
Peggy Martha Pyle
Graham Earl Quinn
Thomas Edward Raper
Deborah Ott Reichle
Dale Elizabeth Reinhard
Pamela Anne Reynolds
Verna Neely Richards
Kim Margaret Richardson
Kay Ellen Rigling
James R. W. Rivera
Whitney Wherrett Roberson
Bruce Allen Roberts
Michael Bruce Roberts
Michael Frederick Roberts
Stuart Dean Roberts
Donald Wade Robertson
Richard S. Robinson
Kerry John Roche
Jeffrey David Rochen
Elizabeth Ann Rock
Carol Boyd Rogers
William Carl Rohde
Allison Rose
Clifford Harris Rose
Danny O'Neil Rose
Stuart A. Rosenberg
Robert Edward Ross
Patricia Emily Rouzer
Judith Lynn Roxby
Peter A. Royal
John S. Ruey
Dorothy Elizabeth Rupp
Steven Warren Sachs
Wendy Lang Salinger
Linda Belle Sancrant
Joyce Elizabeth Sander
Elizabeth Cornwell Sands
Carol A. Sapinsley
Richard James Saunders
Edward Owen Savitz, Jr.
Martin Schlesinger
Merle Frances Schreiber
Susan Shepard Schreiber
Linda Ney Schupper
Donald Earl Schurlknight
Theodore Schwartz
Richard Kincaid Scott
Sally Virginia Scott
Scott Louis Seltzer
Daniel Leritz Sexton, Jr.
Jane Ellen Sexton
Barbara Elaine Shaner
Bryan Edwards Sharratt
Dale Russell Shaw
Sherra Jean Shearin
Charles H. Shoneman
John Thomas Sigmon
Richard Lasell Sillcox
William Alexander Simon, III
Sara Elizabeth Simons
Barbara Laird Sims
David Kenneth Smith
Deborah Lynn Smith
Page Harwood Smith
Cheryl Jean Smith
Thomas M. Smith
Paul Norman Smoland
Peter Nathen Smolen
Maurice Henry Sobel, III
Roswell Howard Spears, III
Mary Irene Spencer
Timothy M. Spiegel
Stephen Scott Spraitzar
Willard D. Squires, Jr.
Bonnie Kathleen Stallings
William Crawford Staples
Lyle Vincent Staten, Jr.
Janet Paula Steel
David Lee Steele
Herman William Steinberg, Jr.
Robert Wallace Steinbruegge
Edwin Severance Stenberg, III
Barbara Jean Stewart
John Taylor Still, III
Ann Louise Stone
Milton Steve Stratos
Roy Michael Strickland
Cynthia Anne Strope
Robert Dale Stubbs
Michael Bruce Suffness
Edmund Cook Sumner
Ernest Cullimore Swiger, Jr.
Judith A. Swiss
Edmund M. Taft, IV
Julia Linda Tall
Jenny Lanning Talton
Helen Randolph Tayloe
Edward Carl Taylor
Linda Rae Taylor
Mark Charles Telge

Marian Ruth Tenenblatt
Constance Elaine Thetford
Cornelius B. Thomas, Jr.
Isaac Casrel Thomas, Jr.
Paul Edward Thomas
Wayne Edward Thomas
Agnes Welch Thompson
Mary Emily Thrall
James Milford Thurber
Thomas Edmund Thurston
James Eugene Tibone
Kathleen Wright Tibone
Gary Paul Timin
Ellen Gaige Titus
James Russell Tomes
Douglas Milburn Toot
Barry Douglas Toth
Carol Sheila Trent
William Douglas Treut
Linda Karen Turner
Lois Adell Tuten
Thomas Hayden Umbreit
Frederick Hoyt Underhill, Jr.
Rowena Richardson Upham
Patricia Ann Urbanus
Margaret Anne Van Antwerp
Jan Stephen Vandenberg
Joseph Nelson Van der Werf
Marion Wiles Varela
Bruce Havird Vincent
William John Von Klemperer
George Shibley Vosburgh, III
Andrew Stuart Wade
Janine Louise Wallin
Paul Spencer Walstad
Sarah Rebecca Wanless
Linda Louise Ware
Ann Cunningham Warren
Lawrence Newton Warren, Jr.
Robert McDowell Watt, III
James Woodroe Weaver
Evan Howard Webster
Alice Adelaide Weldon
Earl Curtis Wells
Guy E. Wells
Frederick LaRue Wenham, III
Carol Susan Werber
Tommileigh West
Walter Carr West, III
William Hugh Westberry
David Milton Whalin
Nicholas Wheeler
James Griffith Whildin, Jr.
Judith Ann Whitley
Sara Elizabeth Whitmire
Pamela Elizabeth Whitney
Tracy Margaret Whittaker
James Foster Wiggins
Phillip Harold Wilhelm
Charles Benjamin Dowling Williams
George Shelton Williams
Jay Carl Williams
Marion Eugene Williams, Jr.
Richard Barnett Williams
Richard Lamar Williams
Sterling Gary Williams, Jr.
Jill Lane Wilson
John Drake Wilson
Kathryn Yorke Wilson
Ronald Lee Winkler
Bryce Mardon Wolf
Harriet Diane Wolf
Harry Lee Wolf
Robert Grant Wolf, Jr.
James Douglas Wolfe
Fern Haywood Wollaeger
David Koger Woodford
Joseph Woodside
Kathryn Anne Workman
Camille Badzgon Wortman
Nina Ruth Wright
Donna Orvin Wuehrmann
Mary Pless Wyatt
Patricia Ann Wyngaarden
Deborah Baker Wyrick
William Lawrence Yaeger
George Carl Yehling, III
Monica Louise York
Mark Nelson Yorra
Charles Holt Young, Jr.
David Russell Young
Christine Zappala
Gordon Robert Zeese
Daniel Lewis Zeidner
Frederick Zengel, Jr.
A. T. Zirkle

Bachelor of Science

David Leif Anderson
Mitchell Jay Bassman
Dan William Bell
Ronald Herbert Bennett
Patricia Binns
Elizabeth Joy Bowers

Charles Valentine Britton
Darlene Elizabeth Brown
William Marshall Butler
Howard John Cahill
Marshall Stuart Checket
Charles Branch Clark, Jr.
Peter Bruce Clark
Howard Leslie Clinton, Jr.
Donna Lee Cohen
James Hilary Coman, III
Walter Alan Cooper
Howard Carlisle Copeland
James Seibt Crowell, Jr.
Sandra Jean Dillard
John Holland Dixon, Jr.
Lewis Bryant Dozier
Eric Ronald Duerr
Ryan Russell Dybdahl
Robert Lane Dziuban
Kathleen Mary Ennis
Andrew George Fallat, Jr.
Harrison W. Farber
John Wayne Farlow
John Bruce Findlay
Edward Paul Fody, Jr.
John William Foreman
Gail Marie Fox
Richard Franklin Fox
Barney Lynn Freeman, III
John Stephen Garavelli
Constance Sandra Gardiner
Jean Marie Gesecus
Harvey Stephen Gotts
Carolyn Reed Guthrie
James Newton Hagar
Elaine Alice Harrell
Kenneth Cullen Harvey
Richard Alan Herold
Elizabeth Evans Hill
Stephen Irvin Johnson
Mary Joan Kersh
Ronald Eugene Kirby
Mary Virginia Knott
Paul Sumner LaFollette, Jr.
Lynne Ann Leininger
Ronnie Ellis Lesher
Steven Eric Lindberg
Donna Marie Lombardi
Anne Calhoun Martin
Nancy Jane Martin
Louis Allen Mayo, Jr.
Robert Gerald McKenzie
Alan Douglas Miley
William Pinckney Miller, Jr.
David Franklin Moffett, Jr.
Gary Vincent Monteith
Jane Catherine Morrison
Thomas E. Moser, II
Alan Charles Moses
Michael Ronald Nathan
Lois Carolyn Nielsen
Ronald Lance North
James Albert Nunley, II
Laurence Lee Osterwise
Linda Ellen Overholser
Frazer Nelson Owen
Carl Herbert Petrich
John Birkner Rawlings, II
Linda Lee Rosendorf
Michael Eugene Rothrock
Cathryn Louise Samples
David Clayton Schneider
Frederick I. Silverman
W. James Sneeringer
Stuart Russell Sprague
Douglas George Sprugel
Daniel Schuyler Strohl
Marc Alan Tanenbaum
Austin Cole Thies, Jr.
Edmund Wilbur Thomas, Jr.
Douglas Van Nostrand
William Borden Wallace
William Curtis Weed
Paul Douglas Weeks
Martin J. Wertheim
Deborah C. Wilkerson
Joan DeWitt Willey
Richard Bland Williams, III
Judy Elizabeth Wilt

Bachelor of Science in Engineering

Daniel Roberto Altshüler Stern
Thomas Horton Beckett
Donald Frank Berns
Sharon Lorraine Bonney
Walter Sleasman Bradley
Thomas Warren Brohard, III
Charles Carpenter Chewning, Jr.
Claudius Barrett Claiborne
Henry Lee Clark, Jr.
Benjamin H. Cooksey, III
John Alan Dermon
Charles Earl Dorrell

Harold Richard Emerick
Thomas Lloyd Farquhar
John Worthington Feick
Michael James Finley
William Peter Francis
William Goodhart Fry
Ronald Lee Gilbert
Richard Evans Gordon
Paul Artrur Gottlieb
Ethan David Grossman
George D. Gryparis
Jorn Preston Harper, Jr.
Michael Dennis Harper
Henry Taylor Harris
Frank Owen Irvine, Jr.
James Roy Jackson
John Howard Judd, Jr.
Edwin Roy Kelly
James Donald Kemp
William Henry Leavell
James Emmett Lenz, Jr.
Ernest Gordon Lunsford, Jr.
Robert Charles Marlay
Stephen Jerome McLeod
John Vick Mickey
William Edman Miller
Robert Langdon Moore
Anthony Dean Morgan
Arthur Donald Morgan
Richard Alan Nay
Thomas Allen Powers
Jonathan Wick Rairigh
Frederic Marsh Ramsey
James Thomas Riley
William B. Rugh
Roger MacKay Shantz
Brian Walter Sheron
Timothy Karl Size
Thomas Edward Snell
Richard Miller Stanger
Richard William Thoms
William Tiga Tita
Robert Lee VanAsselt, Jr.
Ferol Bruce Vernon, Jr.
Jack Robert Walnes
John Turner Whitted
Jesse Theodore Wilkins
Eric Vassar Witt
Thomas Michael Woodard

Bachelor of Science in Civil Engineering

Joseph Howard Jarboe
Daniel Edward Kincaid
Robert M. Mumma, II

Bachelor of Science in Electrical Engineering

Gerald Kenneth Busch
Alvin S. Butterworth, III
Thomas Earl Davenport
Kenneth Michael Hughes
Thomas Lee Steckmest
Jeremy Wade Taylor
William C. Webb, Jr.

Bachelor of Science in Mechanical Engineering

John Howe Ferguson, Jr.
Alvin H. Mayo, Jr.
George Ernest Meier
John Corson Scull
Ronald Vickers, Jr.

Bachelor of Science in Nursing

Nancy Susan Abshire
Beverly Anne Bittner
Judith Womack Blanton
Mary Elizabeth Brownell
Henrietta Katherine Burwell
Jean Mann Butler
Pamela McQueary deVito
Carol Heape Evans
Billie Joanne Gadd
Karen Maureen Gallagher
Carol Gelling
Pamela Roberts Gross
Mary Lucile Gustafson
Rebecca Reynolds Hackett
Jane McClung Haggstrom
Suzanne Kay Hall

Sandra Lynn Hammar
Marjorie Anne Harris
Susan Gray Hendrix
Susan Scott Hoefflinger
Nancy Meyer Holloway
Christina Moye Johns
Lucy Hendrick Kernodle
Ruthanne Lamason
Margarete Nadine Lieb
Susan Whitney MacGahan
Mary Louise Matthews
Kristina Meservey
Marilyn Ann Moeller
Besse Douglass Moorhead
Mary Ellen Morse
Lynda Gay Myslicovan
Virginia Anderson Palko
Beverly Comfort Pearson
Stephanie Lynn Raetz
Ginger Layne Ramsey
Judith Ann Reid
Melissa Kae Robertson
Sheila Jeanette Roe
Pamela Sargent
Carol Palmer Schutz
Sally Ann Shenk
Margaret Susan Shultz
Linda Brooke Smith
Bonnie Lee Stanley
Elizabeth Pratt Van Nest
Donna Karmiol Wagner
Linda Cherl Wagner
Cynthia Starn Walters
Patricia Blevins Webster
Carol Ann Wiggs
Nancy Jarrell Williams
Jane Mansfield Woods

Master of Science in Nursing

Nancy Jo Garside Davenport
Bonnie Keaton Hensley
Nancy Lucinda Lockwood
Patricia Barlow Lowery

Master of Forestry

Johnny Lavon Boyles
Victoria Donna Delill
William Douglas Ericksen
Larry Krinn Evans
Carl Michael Gallegos
Fred Paul Hain
David Andrew Harcharik
Richard George Heintzelman
Jonathan Jeffries
Gerald Bernard Lapointe
Charles King McClure, III
Edward Polaski
Dennis Campbell Rankin
Noah Quinten Speer
Thomas Anthony Terry

Master of Religious Education

Jade Lynne Dell
Ann Cameron Pearce
Carol Ann Tignor
Kothapalli Rajakumari Wilson

Master of Arts in Teaching

Paul Glenn Canady
Madelyn Emerson
Samuel Ferguson
Richard Frank
Helen Hentz Harris
Karen Joyce Lynema
Jean Carol Manning
Joseph T. Miller
Valerie Sue Murdock
Sharon Harley Varnell
Sylvia Wall Wesche
Florence Jennings Wofford

Master of Education

Shirley Warner Day
Russell Curtis Fleshman
Mary Barbara Fox
Ruth Edge Grigsby
Maxine Lee Hocutt
Marian Sims Jones

Ellen Kahn Masters
Mary Ann McDonough
Mirian Grace Mitchell
Sally Eliza Munson
Alice Deemer Remigailo
Carol Elaine Sagro
Martha Jane Scarborough
Dawn Arlene Schumacher
Mary Helen Stasavich
Flicka Louise Tate
Elizabeth Hudson Yohan

Master of Hospital Administration

William Dean Blair
Edward Dale Boston
Jack Oliver Bovender, Jr.
William Charles Brown
Jack McPherson Cook
Norman McBrayer Davis, Jr.
William Fred Glover
Sheldon Keith Gulinson
William Christopher Head
Darryl Rock Lippman
Arthur Edward Quilty
Lawrence Endecott Ross
Gary Vincent Sherlock
Alcide W. St. John
Stanley Lyon Stubbs
William Randolph Van Gieson
Henry Fairbanks Warden, III

Master of Science

Mohammed Sadiq Ali
Rajendra Swaroop Bhatnagar
Joseph John Cudlin
Vito Nicholas Galante
Marshall Aubrey Gallop, Jr.
Terence John Gosciniak
David Michael Holloway
Henry Lau
Alexander Te Lim
Gerd Rechten
Archie Cheng-chi Shiau

Master of Arts

Kenneth Clyde Abernethy
Edward B. Arroyo, Jr.
Elisha Yitzshak Babad
Albert Atwood Bell, Jr.
Barry Peter Berlin
Keith William Bird, Jr.
Elgene Owen Box
Edward H. Brau
Linda Marshall Breytspraak
Millard Ray Brown
Patsy Ann Brown
Larry George Brunner
Donna Jeanne Buonanno
Thomas Burger
Richard Allyn Calkins
Robin Michael Carter
Ronald Roy Castaldo
Elizabeth Anne Cheves
Agnes Hsiu-Ming Chow
Barbara Evans Clements
Clarke Edward Cochran
Ralph Alan Cohen
Frances Ann Cole
Elizabeth Esperanca Colford
Daniel Francis Collins
Suzanne Marie Comer
Louis F. Conde
Eugenia Cecelia Conway
Gordon Southworth Cook, Jr.
Joseph Robert Crapa
Martha Ann Crockett
Michael Paul Czech
C. Ed Davis
Jack Woodward Dice
Elizabeth C. Dix
Morgan Coit Day Dyer
Ann Barton Field
William Thomas Fitzsimmons
Marie Grote
Jeffrey William Hahn
Bowman Newton Hall, II
Douglas Lee Hardy
Joseph George Henrich
Charles Edward Hoffman
Jeffery Wood Hoyt
Connie Bazemore Hyde
Robyn A. Jones
Eric Charles Jorgeson
Jerry Stephen Kier
Richard Frederic Knapp

Leonard William Kolins
Susan Landau
Michael Bowie Lawrence
Cheryl Childs Lilienthal
John Rae Locke, Jr.
Rolf Peter Lynton
Donald L. Maddox
Mona Marian Mangan
Kenneth Hilton Margerison, Jr.
Stephen Robert Martin
Martha Josephine Maskall
Linda Hardy McCarter
Herman Spencer Means, Jr.
Andrea Cowles Menefee
Greta Gustafson Miao
Eileen M. Mikat
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Hugh G. Mosley
Winifred Joy Mulligan
Sandra Rodgers Murray
Gary Clifford Ness
Thomas Charles Niemann
David Arthur Nordquest
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Judith Clare Pfau
Ronald Dean Porter
Mark Jae Reasor
Robert Franklin Reid, Jr.
John Christopher Richowsky
Norman Holley Ridenour
Janet McMillan Rives
David Edgar Robinson
Johanna Louise Rosenwald
Lynne Crytser Rundel
James Alan Schmidtke
Douglas Dean Short
Harry M. Solomon, Jr.
Allen Evan Spalt
Lydia Luella Spivey
Hugh Llewellyn Stephens
David George Stillman
Donna Ethel Stillwell
John Frank Sweets
Virginia Ellen Temple
Curtis G. Thompson
Thomas John Thomson
Arthur Lawrence Thorsen, III
James Joseph Tomek
Garrett Alan Vaughn
Karen Iversen Vaughn
John Nelson Wall
David Patrick Wallace
Richard Edwin Weaver, Jr.
Geoffrey Roderick Webb
Lana Henrichs Wertz
John Emery Whipple
Fulton Robert Wilcox
Gary Lee Williams
Ethel Marie Wolfskill
Robin Linda Zaverl

Master of Divinity

James Carl Adams
Morris Lee Barber
William Donald Britt
Arthur Henry Brown, III
William Douglas Camp
William Thad Chesser
George William Climer, Jr.
John Gibson Cottingham
Benjamin Franklin Davis
Donald Douglas Davis
Linda Miner Durbin
Gerald Lloyd Edge
Glenn Dixon Fields, Jr.
Wilson Drew Heitzenrater
Jerry D. Hoskins
Elbert Johns, Jr.
Kwan-Lyun Kim
Edgar Sevier Lotspeich, III
Frederick T. Mahla
Robert Dean Meadows
Zoe Wade Murphy
David Alan Pacholke
Charles Morgan Peterson
Nancy Dale Richardson
Stanley Joe Robertson
John Edwards Rutland, Jr.
Lloyd Alfonza Sawyer
John Charles Schuster
John Arthur Siegle
William Arthur Smalling
Harold Dallas Stanley
James Carlisle Stokes, Jr.
Amos Taj
Willie Senn Teague
John Hurley Thomas, III
Sione Lepa To'a
Carson S. Tyson
Linda Vera Van Tassel
James Herbert Waller
Henry Douglas Watson
Leslie Cleveland Wicker
John W. Wilder
Peter Michael Wohlwend

Bachelor of Laws

James J. Seeley

Juris Doctor

Conrad Joseph Aiken
James P. Alexander
John Karl Anderson
William M. Andrews
William John Bair
William Jones Bates, Jr.
Joseph Robert Beatty
Charles L. Becton
Robert Edsol Bennett, Jr.
John Sidney Boone, Jr.
Michael Allen Braun
William Holt Briggs, Jr.
Clifford D. Brooks
Alvis E. Campbell
John Anthony Canning, Jr.
Joseph McKay Clayton, Jr.
Edward Caleb Coker, III
William Russell Coole
John Patrick Cooney, Jr.
George A. Costello
Katherine Murray Crowe
James Purnell Davenport
Ronald Edward DeVeau
Norman E. Donoghue, II
James Wallace Dunlap
William A. Ettinger
Thomas S. Evans
Charles M. Firestone
David Edward Foscue
Jerry Gleyre Frederickson
Charles H. Gibbs, Jr.
Howard Gibson Godwin, Jr.
Alan Stephen Gold
L. Alan Goldsberry
Gerald Ray Haddock
John R. Harker, III
John Matney Harmon
Robert M. Hart
Charles Linn Haslam
Robert Paul Herendeen
Paul A. Hilstad
John O. Hoos
Richard Allan Horning
R. Randall Huff
Jerry Ray Jenkins
Merritte Scott Johnson
Richard Norman Junker
Stephen P. Kanar
Michael John Kane
Christine Keller
David George Klaber
Richard Gleason, LaPorte
Joel Marc Lasker
David Douglas Laufer
Clarence L. Ledbetter
Jeffrey Edward Lewis
Edward Rivinus Leydon
Bruce Wayne Lilienthal
Robert Samuel Luttrell
Walter James McNamara, III
Robert Antal Maynes
Kathleen Anne Merry
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James Richard Moore
John D. Moxley, Jr.
Graham Calder Mullen
Leonard Maurice Murphy
Thomas Winfred Murray
Donald Brown Myers, Jr.
Ronald Harvey Neill
Alexander Durham Newton
Nathaniel Lawrence Niles
Daniel Nishiyama
Roger Allen Noback
Michael Frederic O'Brien
Robert Foster Page
Wilson David Perry
John B. Platt, III
Louise Mathews Platt
Robert B. Posey
David McRae Powell
Robert Bernard Pringle
William Elgin Pursley, Jr.
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Robert George Randall
Michael D. Rind
Eugene Victor Roberts, Jr.
Michael C. Russ
Dudley Saleeby, Jr.
John R. Sapp
James E. Schaperkotter
Toby Dena Levenson Sherwood
Ronald L. Shumway
Allan W. Singer
Young Merritt Smith, Jr.

Lee Hunter Spence
R. Keith Stark
Jefferson Kern Streepey
Wayne Randolph Vason
Joseph L. Waldrep
Franklin Forrest Wallis
Robert Steele Warwick
Peter Allen White
Breckinridge Long Willcox
Thomas Clarkson Worth, Jr.
Samuel Turner Wyrick, III

Doctor of Medicine

Robert Wayne Alexander
Frederick Ayer, III
James Louis Bierfeld
James Alan Boylston
Daniel Claude Budd
E. Duane Carmalt
Allen Easley Cato, Jr.
Jack Han-Teh Chang
Jack Allan Cheek, Jr.
Jay David Cook
John Kenyon Crowe
Dwight Phelps Cruikshank, IV
Arthur Brian Davis
Peter Carl de Vito
Richard Hoyt Dixon
Neil Marshall Dunn
Diane Rose Edwards
Melvin Leslie Elson
Thomas L. English
Michael S. Entmacher
Thomas Waring Fauntleroy, Jr.
Charles Stephen Foster
James Wesley Fox
Angelo Vincent Gagliano
Richard Gellar
Richard David Gentzler, II
Alfred Spencer Gervin
Harlan Raymond Giles
Bertram Goldberg
Baird Sanford Grimson
Charles Gruenwald, Jr.
Roy Conrad Haberkern, III
Richard Albert Henderson, III
David P. Hill
Eddie L. Hoover
Bruce Karl Horten
Don Jobe Jackson
James Hobart Jenkins
James Frederick Johnson
Richard B. Karsh
Philip Kummel Keats
Harold Barker Kernodle, Jr.
Douglas Bernard Kirkpatrick
Stephen A. Koff
Michael John Labance
Dale Nolan Lawrence
Benton Bains Levie
Steven Ted Levy
Robert Warren Lonon, Jr.
Charles Bruce Malone, III
Richard Lynn Marafioti
Donald Marger
Charles Anthony Marotta
Stuart Jeffrey Masters
Daniel Megna
Alan Howard Meyer
Dan Cockrill Moore
William Guerrant Moorefield, Jr.
Richard Bacon Morawetz
Mary Jeanette Hagan Morriss
Larry Bernard Newman
Maynard Ramsey, III
Richard Vladimir Remigailo
Joseph Douwe Rienstra
Vernon Dodds Rowe, III
Nicholas John Rummo
Charles Donovan Smith
Myron David Tremaine
Henry Griffith Utley
David Valle
Frank Marshall Volberg, Jr.
David Michael Waggoner
Richard Wriston Whitfield
Randal James Williams
Thomas Nathan Wise
Thomas Michael Zavelson

Master of Theology

Charles Edward Alexander
Thomas Carroll Bourn
James Clement Buckley
Richard Lewis Cox
Jay Howard Fast
David Fox Fleece
Frank Edwin Garver
Elmer O. Hall

John Edward Crane Harris
Levi Huffman Humphreys
Conrad Randal James
Mark Kase
Hugh Franklin Lecky, Jr.
John Thomas McBride
Donald James Shoulberg, C.S.C.
Herman Edward Thomas
Charles Anthony Tansill
K. M. Varghese
Kothapalli Wilson

Master of Laws

Augustine Ukiomogbe Obozuwa

Master of Comparative Law

Athanasios Demetrios Paroutsas

Doctor of Education

Jesse Lee Allen
Richard Scott Craddock
William Peter Freitag
Elizabeth Lovell McMahan
Alvin Grant Myrick
Sarah-Warner Jenkins Pell
Keener McNeal Smathers
Ann Coble Stallings
Charles Floyd Ward
Larry Wayne Watson
William Watts Williams
Ruby Leila Wilson

Doctor of Forestry

John Lewis Gray

Doctor of Philosophy

Larry Ihrig Amstutz
James William Applewhite, Jr.
Joseph John Arpad
Lewis Franklin Ballard
Thomas Preston Barket
Thomas Galbraith Bastedo
George Chester Bedell
R. Bruce Bickley, Jr.
Rose Eisman Boyarsky
Beverly Dianne Brian
Nicolette Friederich Brown
Keith Winston Butler
Dale Wayne Cannon
Patrick A. Carone
Richard Ian Cashman
John Carroll Cavanagh
William Lee Clapp
Jeffrey Johnstone Clarke
Stanley Gordon Clarke
Richard James Connett
Larry Wayne Cook
Carlos Francisco Corredor-Pereira
Richard Arthur Crofts
Marshall Robert Crosby
John Cunningham
Stephen Wayne Dale
Thomas Richard Davis, Jr.
John Goodwin Dennis
Patrick Peter Dunn
David S. Farrier
Robert Ellis Fellows, Jr.
Diane Oakerson Fleming
Martha Randolph Foy
Allen Frankfater
David Paul Gagan
William Bernard Gravely
Thomas Everett Griess
John Frederick Hansen
Victor Alan Harris
Ronald Leroy Hay
Frederick Evan Henoch
Junior Bristo Hilmon
Hiram Horace Hilty
Thomas Charles Hood
John Paul Jones
Russell Allen Jones

Syed Virasat Shikoh Kashmiri
Robert Richard Kerton
Hyun-Dju Kim
Edward Bleakley King
Virginia Kirby-Smith
James Joseph Lichter
David Owen Lucas
James B. Lucke
Ronald E. Marcello
Ronald Lee Massanari
Edwin John Matthews
James Samuel McKnight
Charles Ronald Middleton
Rufus Ledford Moretz
Roger Bain Nelsen
Peter Eric Nute
William Clarence Oelfke
Allan Mitchell Parrent
John Thomas Parsons
Sarah Jox Parsons
William Melvin Penn, Jr.
Rudolf Plehwe
Charles Henry Racine
Abu Tayeb Rafiqur Rahman
Audrey Fisher Redmond
William Warren Reinhardt
Ceorge David Richards
Michael D. Richards
Myong-Joon Roe
Benjamin Houston Romine, Jr.
John R. Rosenwald
Craddon Richard Rowlands
Philip Wilson Rundel
Berge Sarkissian
Paul Scagnelli, Jr.
David Lee Sellin
John Lawrence Sharpe, III
Kelly Cray Shaver
David William Sherwood
Herbert Edward Spivey
Allen Frederick Stein
Lloyd Kenneth Stires
Michael Vincent Raphael Thomason
James Russell Thompson, Jr.
Joseph Caither Walser, III
Charles Nelles Watson, Jr.
Peter Douglas Weigl
Daniel I. Weinberg
John A. Wilhelm
Richard Henry Zander
Richard Olis Zerbe, Jr.
Barbara Brown Zikmund
Grover Alfonso Zinn, Jr.

Commissioned Officers in the United States Navy and the United States Marine Corps

Ensign, United States Navy

Thomas Horton Beckett
Robert Stephen Brent
Guy Del Clifton
James Ray Dover, Jr.
Michael James Finley
Richard Franklin Fox
William Peter Francis
Douglas Melvin Franks
Glen Burton Gray
Stephen Irvin Johnson
Joseph Elbert Jordan, Jr.
Stephen Arthur Kase
John Hunter LeSueur, Jr.
Stanley John Patch, Jr.
Barry Douglass Toth

Ensign, United States Naval Reserve

Michael Charles Balog
Robert Thomas Cadwallader, Jr.
John Preston Harper, Jr.
Stephen Kelly Harris
John Wallace Malley, Jr.
Robert Charles Marlay
Robert Graham McMillan
Charles Stanton Meek
John Akin Melville
Roger MacKay Shantz
Stephen Scott Spraitzar
Thomas Lee Steckmest

Second Lieutenant, United States Marine Corps

Charles Branch Clark, Jr.

Second Lieutenant, United States Marine Corps Reserve

Richard Bruce Lieb

Commissioned Officers in the United States Air Force

Second Lieutenant, United States Air Force Reserve

Joseph Ernest Baird
Ronald Herbert Bennett
Kelly Thomas Drake
Eric Ronald Duerr
Willard Leland Eckhardt, Jr.
James Newton Hagar
Arthur Everett Hoeg, III
George Samuel Irby, III
Ross Erwin Jones
John Howard Judd, Jr.
Ronnie Ellis Lesher
Daniel Nishiyama
Lawrence Coe Parthum
John Richard Pieklik
John Birkner Rawlings, II
Richard S. Robinson
John Thomas Sigmon
Douglas Van Nostrand
William Michael Warren, Jr.
Earl Curtis Wells

Degrees Awarded September 1, 1968

Bachelor of Arts

Erik Marshall Anderson
McCutchen Brooks Anderson
William Holt Anderson
James Douglas Archer
Carroll Dwight Arnett
Lawrence Murphy Beach
Leslie Beckett
Gregory Charles Bennett
Barbara Karen Berg
Richard Thomas Berney
Peter Howe Blunt
Kenneth Snead Boger
Suzanne Bolton Brooks
Robert Maurice Burr
Judith Lee Carpenter
Thomas Stanley Coble, III
Paul R. Conroy, Jr.
Mark Irvin Cowman
Kenneth Allison Cureton
Pamela Vaughan Daniel
Michael Joseph John Dileo
John Wood DiPasquale
John Oliver Evans, Jr.
Robert Michael Foyle
Russell Benton Fuller
Ronald William Gerbe
William Harvey Guy, II
John Calvin Harmon, III
Susan Jeannette Henney
Donald Lee Howard
Jonathan Craig Kinney
Mary Chumbley Lang
George Sam Latiff
Jeffrey Arnet Lilly
Louis Bruce Mahler
Robert Elliot Margulies
Jean Edith Martin
John Aubrey Moffett, Jr.
Kelly Jon Morris
Donald Bryce Hoe, Jr.
Paul Michael Politano
Susan McClelland Prescott
Gaylon Eugene Ramsey
Michael Thomas Renneker
John Terry Richardson
Joe Arthur Rudberg
Christine Rupard
Marcia Coleman Slease
Sarah Hughes Smith
Patrick Michael Stamile
Edward Robert Stoebe, Jr.
Carol Ann Tewksbury
Arthur Shearon Thompson
Ronald G. Trader
Linnea Summers Turner
Vera Cecelia Vento
Mary Ruth Gardner Wiggins
Phillip Gaines Williams
Alfred Travis Zodda, Jr.

Bachelor of Science

David Eric Blackwell
Wade Hampton Britt, III
Steven Ravett Brown
Paul Graham Clarke
Dennis T. Logan
William Calef Phelps, Jr.
Joseph C. Topping, Jr.

Bachelor of Science in Civil Engineering

Robert Stuart Butterworth

Bachelor of Science in Mechanical Engineering

Clayton William Davis
James Barton Hysong

Master of Science in Nursing

Peggy Ellis Dulaney
Janice A. Napoleon
Carol Ruth Tyler

Master of Forestry

John Daniel Walstad

Master of Arts in Teaching

Marietta Bagley Allison
Daniel Wayne Ball
Revonda Jean Ball
Sarah Jenkins Beale
Kenneth Michael Blank
Susan Janet Browne
Elizabeth Horton Burts
Watson Lee Burts
Lelia Clinard Butler
Bruce C. Chandler
Sydney G. Chapin
Edward Arthur Curran
Raymond P. Daria
Robert Leon Depo
Joyce Conrad Drinkwater
Charles Levern Ezell
Roberta Gail Floyd
Charlotte Carole Gaither
Donald Wayne Grigg
Judith Acree Hansen
Sarah Graves Harkrader
Ronald Eugene Heindel
Donald Baxter Hogan
Billy Paul Hunt
Stanton M. Jones
George William Kelbaugh
David Charles Kingsley
Daniel Klim
Nathaniel Knox
Ann Marie Lasher
Jackson Frederick Lee, Jr.
Daniel Ray Leigh
Edmond Allen Mason
Jane Anderson McCurdy
Louise Jaquette Mowbray
Sharon Elizabeth Mullen
Karen Rom Nash
James Neil Nichols
Elizabeth Lawrence Perkinson
Edwin Joseph Putzell, III
Donald Charles Quester
Susan Landis Robinson
Yvonne Merritt Rutledge
Helen N. Saleeby
Joan Marie Scagnelli
William Cabell Smith
Nancy Clendenin Stedman
Laura Roberts Taylor
Ann McArthur Tedder
John Hudson Tiner
Vicki Lu Tolar
Riddick Cornelius Trowell
Joseph Henry Vanderpool, Jr.
Ronald Eugene Willard
Persis Tracy Williams
Virginia Monroe Yager

Master of Education

Barbara Thornton Benton
Barbara Bagley Boone
Kathlynn Elizabeth Childs
Shirley Wood De Lucia
Carolyn Bond Earp
Lillie Betsy Gunter
Vicki Webster Hieronymus
Nancy Roberts Holmes
Lynn Kirk
Beverly Foreman Meredith
Betty Parks Moore
Harold Lance Rogers
Betty Pei-te Shen
Ann Kimball Stafford
Ruth Harriss Tyson
Anita Cross Wicker
Mary Elizabeth Willard
Ellen Vogel Wilson
Willie Gene Woods

Master of Science

George Buckley
David Jeng-kuo Chen
Hriday Nath Darbari
Jean-Philippe Gaillard
Jake Hallie Halford
Dong-shan Wu

Master of Arts

Richard Erlend Adams
Carolyn Shields Attkisson
Brian Dennis Babo
Stephen Wolf Beach
Michael Garey Beam
John Gordon Blodgett
Charles Louis Bragaw, III
Richard Clinton Bruce
Stephen G. Bunker
Bill Camp
Barbara Kirk Cavanagh
Arthur Thomas Charlesworth
Edmund Melson Clarke, Jr.
William James Cleary, Jr.
Heyward Hamilton Coleman
Paul Edward Corcoran
William Wayne Dickson
Charles Edward Dill, Jr.
John Bernard Dillon, Jr.
David Edward Dodge
Charles Edmond Moss Dunlop
William Calvin Dunning
Elizabeth Hobgood Eidenier
Robert P. Felgar, III
Homer Ellis Finger
Allen B. Frankel
Vinton Eric Geistfeld
Henry Gorman
Sara Gayle Gorman
Stephen Anthony Graham
Roy Fred Gratz
Terrence Layne Grimes
Werner Gruninger
Anthony Frank Hausner
Myron Walter Hedlin
Carol Taplett Honhart
Michael William Honhart
Karen Joy Singer Jabbour
Khwaja Rashid Javaid
Margrit E. Koehler
James Richard Krabill
Thomas Rollin Kramer
Malcolm Graham Lane
Stephen Harry Levy
William Oakes Lindeman
Johannes Richard Lischka
Barry Lee Lobb
Theodore Edward Long
Robert Emil Ludt
Lance Lufkin
Sherman Weston MacGarvie
Marilyn Elizabeth Manser
Margaret Louise Marks
John Marshall McCrimmon
Charles Ernest Miller, Jr.
Emmette Ohmer Milton, III
John J. Monoski, III
Walton Smith Moody
Leslie Moskowitz
John Peter Norris
LaTrelle Blackburn Oliver
Thomas J. Olivier
Harvey Leland Paige
Ersa Carolyn Patterson
Amy Morrison Perry
Howard Mitchell Phillips, Jr.

Jeffrey Lawrence Piech
Ryali Rajagopal
James Calvin Reber
Martin Alan Reuss
James Michael Robertson
Ronald Charles Robinder
Robert Douglas Ruth
Diego Salazar
Wadih Antoine Saleh
Richard A. Schwarz
Larry David Shatoff
Bonnie Fiedorek Sloane
Melvin Leroy Snyder
Gerald Philip Stadler
Getahun Tabor
Thomas Michael Verich
Carl George Wagner
George Kontz Walker
Dennis Gerard Waller
Diana Valiela Ward
Peter Risk Weidner
James Frederick Willis
James Louis Wiser
Cullen Caswell Zimmerman
Ellen Scheiner Zinner

Juris Doctor

Robert Imbrie Frey
James E. Keenan
Michael Smith Scofield

Doctor of Medicine

David Williams Allen

Doctor of Education

Gerald Marion Bolick
Charles Monroe Hyder
William Franklin Landing
Robert L. Thompson

Doctor of Philosophy

John Timothy Anderson
Kirk Carl Aune
Joseph John Battistone
Robert Francis Bergstrom
Robert Hoyte Block
Gordon Powers Boutwell, Jr.
Richard Adams Brashares
George Kyle Coffin
Arthur Gordon Lynn Darroch
Donald Max Davis
James Anson Farrar
Frank Gado
Karl Claudius Garrison, Jr.
James Richard Gross
Juergen Siegfried Hahn
Morris Kyger Holland
James Wilson Holsinger, Jr.
Alan Albert Jabbour
Robert L. Kendall
Nikolai E. Khokhlov
Robert M. Koerner
Rudolph Wilhelm Krutzen
Richard W. O. Lethander
James Richard Leutze
John Bruce Lindeman, II
James Raymond Lord
Wayne Lee Mattice
Barbara Jo Moore
Marion Vernon Morgan
Charles Jay Nelson
Roger Wayne Nelson
Owen Lennon Norment, Jr.
Allen Freeman Page
Alden Bryan Pearson, Jr.
Elizabeth Clare Raff
Calvin J. Roetzel
Gilbert Thomas Rowe
Ahmad Salahuddin
Albert Conrad Saunders
Frederick Truman Seibel, Jr.
John Marshall Slepetz
Thomas Arthur Spragens, Jr.
J. Robert Stottlemyer
Robert Warren Sutherland, Jr.
John William Teipel
Thomas Clark Vanaman
Margaret Nicholls Utley
Frederick Henry Weaver
Douglas William Webbink
Dana Winston Wilbanks

Honors and Distinctions of Candidates for Degrees, 1969

The Woman's College and Trinity College

Summa cum laude

Jeffrey David Rochen
Ellen Gaige Titus
Donald Wayne Pearce
Julie Bergren Holmquist
Charles Thomas Clotfelter
Mary Jane Kellett

Magna cum laude

Roger Harold Ostdahl
Katherine Alyce Crane
Samuel Letcher Barton
Merle Frances Schreiber
Lewis Bryant Dozier
Margaret Anne Van Antwerp
Harvey Stephen Gotts
Eric W. Lothman
Dallas Kern Holoman
Kenneth Cullen Harvey
John David Englar
Cornelius B. Thomas, Jr.
Carol Anderson Crosby
Douglas George Sprugel
Mary Etta Eyler
William Dillard Gudger
David Jackson Bailey
Ingrid Ellen Lund
Mary Fulton Green
Lucille Knox Mason
Charles Wimberley Dunn
Deborah Lynn Smith
Sandra Jean Dillard
Fern Haywood Wollaeger
Helen Randolph Tayloe
Isaac Casrel Thomas, Jr.
Mark Nelson Yorra
Jane Ellen Sexton
Tracy Margaret Whittaker
John Holland Dixon, Jr.
George Nassif Corey
Janet Paula Steel
Gary Paul Timin
Richard Hardy Lee
Dorothy Elizabeth Rupp
Alice Adelaide Weldon
Dorian H. Coppenhaver

Honors in Departments and Schools

Departmental Graduation with Distinction

Art

Charles Colbrunn
Julie Bergren Holmquist
Deborah Baker Wyrick

Botany

Douglas George Sprugel

Chemistry

John Findlay

Economics

Marjorie Dew Beckaert
Rebecca Lou Bogard
Bertie Nelson Butts, III
Thomas Carlyle Clark
Douglas Franks
John Edward Krampf
Alfred Lacy, Jr.

Electrical Engineering

Daniel Roberto Alschuler
Walter Sleasman Bradley
John Alan Dermon

English

Deborah Lane Bowers
Mary Fulton Green
James Michael Grimwood
Sandre Emerson Monsman
Merle Frances Schreiber
Julia Linda Tall
Walter Carr West, III

French

Julia Davis Field
Jo Ella Manalan

German

Don Pearce

History

Theodosia Dargan Clark
Charles Thomas Clotfelter

John William Coogan, Jr.
Alice May Craft
Catherine Lee Gaylord
Gloria Guth
Eleanor DeArman Kinney
Sally J. Avery Nathan
Diane Lynne Pearson
Ernest Cullimore Swiger, Jr.
Helen Randolph Tayloe

Mechanical Engineering

Thomas Lloyd Farquhar
Frank Owen Irvine
James Donald Kemp
John Vick Mickey
Anthony Donald Morgan
Eric Vassar Whitt

Music

William Dillard Gudger
Dallas Kern Holoman
Alma Mickens

Political Science

Robert Boggs Creamer
Jenny Talton

Psychology

Carolyn Elizabeth Carder
Katherine Alyce Crane
Philip Lacy
Isaac Casrel Thomas, Jr.
Camille B. Wortman

Sociology

Janice Kathryn Cary

Zoology

Philip Moorhouse Best
Dorian H. Coppenhaven
David F. Moffett
Alan Charles Moses

Air Force Reserve Officers' Training Corps

Distinguished Cadets

Ross Erwin Jones
John Howard Judd, Jr.
John Thomas Sigmon

Naval Reserve Officers' Training Corps

Distinguished Naval Graduate

John Preston Harper, Jr.

School of Engineering

Magna Cum Laude

Eric Vassar Witt
John Preston Harper, Jr.
James Roy Jackson
James Emmett Lenz, Jr.
Frank Owen Irvine, Jr.
Thomas Horton Beckett
John Howard Judd, Jr.
John Vick Mickey

Summa cum laude

Sharon Lorraine Bonney
Richard Evans Gordon
Anthony Dean Morgan

Elections to Tau Beta Pi

Thomas Horton Beckett
Sharon Lorraine Bonney
Walter Sleasman Bradley
John Alan Dermon
Thomas Lloyd Farquhar
Richard Evans Gordon
John Preston Harper, Jr.
Frank Owen Irvine, Jr.
James Roy Jackson
Joseph Howard Jarboe
John Howard Judd, Jr.
James Donald Kemp
James Emmett Lenz, Jr.
John Vick Mickey
Anthony Dean Morgan
Thomas Allen Powers
Frederic Marsh Ramsey
Eric Vassar Witt

School of Nursing

Magna cum laude

Carol Ann Wiggs

The Divinity School

Summa cum laude

Jade Lynne Dell
Donald James Shoulberg

Magna cum laude

Levi Huffman Humphreys
Glenn Dixon Fields, Jr.
Charles Edward Alexander
Peter Michael Wohlwend

School of Law

Elections to the Order of the Coif

William Ettinger
John Harmon
Robert Hart
Jerry Jenkins
Michael J. Kane
Graham Mullen
Michael O'Brien
David Powell
Michael Russ
James Seeley
Toby Sherwood

School of Law

Graduated with Distinctions

William Bates
Joseph Beatty
William Briggs
Katherine Crowe
James Davenport
William Ettinger
John Harmon
Robert Hart
Charles Linn Haslam
Robert Herendeen
John Hoos
Jerry Jenkins
Michael J. Kane
David Klaber
David Laufer
Frank Mock
James Moore
Graham Mullen
Michael O'Brien
Robert Posey
David Powell
Eugene Roberts
Michael Russ
John Sapp
James Schaperkotter
James Seeley
Toby Sherwood

School of Medicine

Elections of Alpha Omega Alpha

Dwight Phelps Cruikshank IV
Richard David Gentzler
David Lee Valle
Richard Hoyt Dixon
Charles Stephen Foster
Bruce Carl Horten
Roy Conrad Haberkern, III
Stephen Andrew Koff
William G. Moorefield, Jr.
David Michael Waggoner

Elections to Phi Beta Kappa During 1968-1969

Bonlyn Elizabeth Agan
Kathleen May Ashley
David Jackson Bailey
Samuel Letcher Barton
Wayne Arthur Beatty
Thomas Horton Beckett
Sharon Lorraine Bonney
Walter Sleasman Bradley
Joy Anne Brown
Susan Prescott Carrithers
Janice Kathryn Cary
Charles Thomas Clotfelter
Dorian Harry Coppenhaver
George Nassiff Corey
Katherine Alyce Crane
Carol Anderson Crosby

Vera Hopkins Cudlin
Pamela Vaughan Daniel
Edith Bachelor DeMik
John Alan Dermon
Sandra Jean Dillard
John Holland Dixion, Jr.
Robert Paul Dolian
Lewis Bryant Dozier
Charles Wimberley Dunn
Ann Elizabeth Earnhardt
Willard Leland Eckhardt, Jr.
James Wiley Ellett
John David Englar
Mary Etta Eyler
Cynthia Peterson Gaw
Richard Evans Gordon
Harvey Stephen Gotts
Mary Fulton Green
James Michael Grimwood
William Dillard Gudger
John Preston Harper, Jr.
Kenneth Cullen Harvey
Julie Bergren Holmquist
Dallas Kern Holoman
Frank Owen Irvine, Jr.
James Roy Jackson
Ivan Harlan Jacobs
Glenn Craig Jacobsen
Sue Stromberg Johnson
John Howard Judd, Jr.
Mary Jane Kellett
Richard Hardy Lee
James Emmett Lenz, Jr.
Mary Kendra Lewis
Eric William Lothman
Ingrid Ellen Lund
Lucille Knox Mason
John Vick Mickey
Sandra Emerson Monsman
Anthony Dean Morgan
Richard Alan Nay
Lois Carolyn Nielsen
Roger Harold Ostdahl
Donald Wayne Pearce
Henry Baker Perry, III
Thomas Allen Powers
Jeffrey David Rochen
Dorothy Elizabeth Rupp
Wendy Lang Salinger
Merle Frances Schreiber
Deborah Lynn Smith
Douglas George Sprugel
Janet Paula Steel
Helen Randolph Tayloe
Carol Ann Tewksbury
Cornelius Bullard Thomas, Jr.
Isaac Casrel Thomas
Mary Emily Thrall
Gary Paul Timin
Ellen Gaige Titus
Linda Karen Turner
Margaret Anne Van Antwerp
Alice Adelaide Weldon
Tracy Margaret Whittaker
Eric Vassar Witt
Fern Haywood Wollaeger
Deborah Baker Wyrick
Mark Nelson Yorra

Elections from Ph.D. Candidates, 1968-69

Robert F. Bergstrom
Richard Ian Cashman
Arthur Gordon Darroch
Thomas Everett Griess
Alan A. Jabbour
Russell Allen Jones
Sarah Jox Parsons
Calvin Junior Roetzel
Craddon Rowlands
Douglas William Webbink

Special Prizes and Awards

ACC Plaque for Excellence in Scholarship and Athletics—Edwin Severance Stenberg
American Society of Civil Engineers Prize—John Preston Harper, Jr.
Richard Miller Stanger
American Society of Mechanical Engineers Award—Frank Owen Irvine, Jr.
American Public Works Association Prize—Joseph Howard Jarboe
Alice M. Baldwin Scholarship Award—Sandra Jean Dillard
Mary Fulton Green
Joyce Elizabeth Sander
Ellen Gaige Titus

Evelyn Barnes Memorial Scholarship Award—Elizabeth Ann Rock
Janet Paula Steel
Borden Undergraduate Research Award in Medicine—James Hobart Jenkins
Davison Scholarship—Dale Nolan Lawrence
Duke University Department of Chemistry Award—John Bruce Findlay
Duke University School of Medicine Award—Eddie Lee Hoover
Jay David Cook
Anne Flexner Memorial Award for Creative Writing—First Prize—Sean Devereux
Hamilton Watch Award—Sharon Lorraine Bonney
Thomas Jefferson Award—Eddie Lee Hoover
Lange Medical Publications Award—David Lee Valle
Mary Hagan Morriss
W. T. Laprade History Prize—Charles Thomas Clotfelter
Guy Edward Wells
Robert E. Lee Award—David Michael Jordan
Merck Index Award—Jeffrey David Rochen
Roger Harold Ostdahl
Milmow Prize—James Emmett Lenz, Jr.
C. V. Mosby Book Award—Charles Bruce Malone, III
Dwight P. Cruikshank, IV
Roy Conrad Haberkern, III
Richard Bruce Karsh
Don Jobe Jackson
Moseley Award—Nancy Meyer Holloway
North Carolina Association of Certified Public Accountants—Richard Kincaid Scott
School of Nursing Alumnae Award—Ruthanne Lamason
Outstanding Service Award—Jean Butler
Roche Award—David Lee Valle
Henry Schuman Prize for Music—Dallas Kern Holoman
Charles Ernest Seager Memorial Award—Walter Sleasman Bradley
Walter J. Seeley Scholastic Excellence Award—John Preston Harper, Jr.
William Senhauser Prize—Richard Williams
George Sherrerd III Memorial Award in Electrical Engineering—
Sharon Lorraine Bonney
James Roy Jackson
Smith Kline and French Award for Medical Writing—Maynard Ramsey, III
Karl E. Zener Memorial Prize—Katherine Alyce Crane

*Undergraduate Class Honors, 1968-69**

Trinity College

Freshman Honors

Robert Burton Warren
David A. Brodsky
Sidney Loy Gulledge
Scott Russel Vandenberg
James Harbin Cooke, Jr.
Lonnie Ray Sherrod
Jeffrey Harris Sheetz
Robert Angel
Robert Allen Broughton
John Bradley Fortune
Robert Arnett Shaw
Roger Alan Opel
George Karl Rahdert
William David Cochran
John Aubrey Howell
Richard Alan Bruno
Kenneth Neil Musen
Theodore Thompson Jordan
John Charles Beall
Mark Lewis Perlman

**Students listed according to average.*

Robert Vaughn Lamb III
Lawrence Bruin Katz
Robert Graham Martz
Brad Leslie Doores
Richard Britton Mayo
John Andrew Kindzierski
David Eric Carpenter
Craig Randall Irish
Scott A. Miller
William Morgan Hamilton, Jr.
Lawrence Eley Blanchard III

Sophomore Honors

William Tobin Miller
Guy Francis Guinn
John Carson Hay Steele, Jr.
John Lyndon Newell
Stanley Glenn Rockson
Steven Alan Meixel
William Henry Blackwell, Jr.
Richard Marion Draffin
Douglas Stringer Brierley
Roger William Lidman
Leslie Neal Sutton
Scott Carey Sanborn
Michael Francis Gilligan
William David Gaither
Stuart Kirkland Wier
Archie Ray Portis, Jr.
Eric Richard Weidmann
Thomas Roy Witt
Gary David Blake
William Elliott Johnston
David Scott Anderson
Phillip Carl Magnuson
Douglas Willard Brenton
Jeffrey Roberts Lee
Roger Richard Solomon
Timothy Stanley Baker
John Francis Terrell
Darrell Richard Brown
Benjamin Wesley Franklin
Jeffrey Val Klump
Harlan Lary Priour
John Mathews Bowers
Charles Kantor
Mark Jay Kunkel
Robin Arthur Moore

Junior Honors

John Donald Schrumpf
Robert Morris Townsend
Wayne Arthur Blanks
Mitchell Lewis Cohen
Robert Doyle Stulting, Jr.
Charles David Stephens
Russell Kenneth Nieli
David Mark Rubenstein
Robert Miller Geist, III
Elliott Williamson Reed
Robert William Hepler
Harry Osborn Finklea
Jeffrey Hugh Forster
Clark Roger Wilcox
David Walter Schaaf
John Bryan Henderson
Robert Ernest Cunningham, Jr.
Sheldon Kleger
Gray Floyd Crouse
Donald Steven Orr
Andrew Marshall Verner, III
Kenneth Powers Vickery
Wyndol Carroll Furman
Stephen Harold Brown
David McCutcheon Guy
John Lloyd Abernethy, Jr.
Larry Phillip Schumann
Glenn Douglas Simpson
Joel Peter Caplan
Jeremy Alan McCreary
Jonathan Eben Flitter
Richard Lorin Hartz
Andrew Wiseman
David Miles Novick
Charles Ethelbert Allen
Steven K. Hoffman
David Ward Kroepsch
James Franklin Keel, III
Michael Eugene Landis
David Harold Murphree
Lanning Derryl Jones
Neil Aronin
Jay Nelson Hartz
Kenneth Harry Davidson
David Bate Parsons
James David Wilson, Jr.
Richard Alan Reisman
John McPherson Cheeseman
David Alan Trice

Woman's College

Freshman Honors

Jane Shotwell Satterwhite
Jean Paris Taylor
Sue Ann Ensor
Cathleen Dru Cake
Mary Frances Burt
Roberta Ellen Farb
Sarah Marshall Ellett
Stella Parker Jones
Margaret Stratford Livingstone
Gail Ann Kennedy
Catherine Marie Radovich
Karen Louise Laughlin
Catherine Joyce Everett
Frances Sledge Nicrosi
Lois Stein
Susan Elizabeth Darrow
Linda Susan Hyatt
Jennifer Lynn Warlick
Mary Sharon Gibson
Cynthia Wray Spratt
Cynthia Jane Kruska
Celeste Lewis Wesson
Mary Noeman Woods
Cynthia Lee Jones
Annette Dixon
Pamela Hoyt Prescott
Adrianne Lynnette Combs
Annmarie Rehm
Sarah Anne Pryor
Carol Ann Friedenberg
Janet Louise Young
Laura Christine Kinsey
Mary Elizabeth Renaud
Judith Atlas
Marie Elisabeth Katz

Sophomore Honors

Deborah Lee Horton
Susan Gay Hamilton Nicoll
Mary Louise Getz
Leslie Marion Howard
Sheryl Ann Scott
Lee Anne Furlong
Maureen Rebecca Hanson
Nancy Lee Redfearn
Louise Pearson Smith
Diane Joyce Kyker
Kathryn McLean Christie
Helen Jean Taylor
Janet Rose Zimmer
Marcia Jensen
Barbara Louise Ego
Helen Anne Sadd
Jeanne Elizabeth Cockrell
Mary Martha Manley
Lucy Highsmith Caudill
Laurie Judith Eisenberg
Mary Kathryn Schuette
Priscilla Lillian Tate
Mary Susan Mott
Carol Macon Crocker

Junior Honors

Barbara Ann Waterman
Linda Gay Maddox
Jane Lorene Rohlf
Helen Ann Fruitstone
Susan Margaret Pace
Beverly Louise Mullen
Mary Elizabeth Sargent
Vannie Kay Hodges
Joanne Elizabeth Yoder
Virginia Lee Voigt
Dorothy Converse Young
Kathleen Burt Johnson
Elizabeth Ann Cole
Elizabeth Ann Hopkins
Natalie Sullivan Bimel
Susan Yvonne Illston
Karen Lynn Griffin
Lisa Roseman Shusterman
Kathryn Christine Woodward
Sandra McMurray Gibson
Sue Ann Monger
Linda Lee McCall
Mary Christine Burrus
Sara Frances Gleaton
Sarah Sheffield Jones
Leta Sue Carlson
Mary Mitchell Dalton
Carolyn Mary Arnold

Patricia Caldwell Garvin
Claudia Marie Pons
Janis Arlene Wende
Mary Lawrence Deibel
Virginia Bradley Wolfe
Cheryl Anne Cowdrick
Carol Ann Cockram
Anne McCartt Shaffer
Susan Witty Hayes
Eileen Emily Cannon
Nancy Smith Warder
Judith Eleanor King
Anne Starr Chenoweth
Sally Marion Thompson
Ann McKinney Ivie
Katherine Elizabeth Williamson
Judith Elizabeth Hoover
Sarah Moore Adams
Kathleen Waldenfels
Anne Paschall Pulver
Leslie Jane Ward
Elizabeth Ann Staple

School of Engineering

Freshman Class Honors

Gerald Russell Whitt
Leonard Zigmond May
Stephen Dale McCullers
Mark Charles Davis

Sophomore Honors

Gary Edward Herman
Clarence Earl Thomas
Chun Hung Lam
Michael David Jones
Thomas Kelcec
Curt Arnold Rawley
Allen Floreus Suit

Junior Honors

Eric Sigurd Sjoberg
Thomson Whitin Rockwood

School of Nursing

Class of 1970

Martha Lipshitz
Joan Schweickart
Jean Spurlock

Class of 1971

Nancy Frees
Wendy Hagstrom
Sharon Kasdan
Joan Stanley

Class of 1972

Erica Caruso

Enrollment Statistics October 15, 1968

	I Full-Time (a) Degree M	I Full-Time (a) Degree W	I Full-Time (b) Non-Degree M	I Full-Time (b) Non-Degree W	II Part-Time (a) Degree M	II Part-Time (a) Degree W	II Part-Time (b) Non-Degree M	II Part-Time (b) Non-Degree W	III Non-Resident (a) Official Leave M	III Non-Resident (a) Official Leave W	III Non-Resident (b) In Absentia M	III Non-Resident (b) In Absentia W	IV Auditors M	IV Auditors W	V Other M	V Other W	VI Full-Time Equivalent M	VI Full-Time Equivalent W	VII (a) Total Enrollment M	VII (a) Total Enrollment W	VII (b) Total Enrollment by College & School
UNDERGRADUATE ENROLLMENT																					1519
Woman's College		1427		4		7		24		33				16				1442		1511	1511
School of Nursing	2	282				1		2		1							2	283	2	286	288
Trinity College	2463		3		2		12		15				8				2471		2503		2503
School of Engineering	416	2					1		1								416	2	418	2	420
SUBTOTAL	(2881)	(1711)	(3)	(4)	(2)	(8)	(13)	(26)	(16)	(34)			(8)	(16)			(2889)	(1727)	(2923)	(1799)	(4722)
GRADUATE AND PROFESSIONAL ENROLLMENT																					
Graduate School			2	2			7	4									959	298	1166	367	1533
Degree Candidates	922	275			102	55					133	31									
Divinity School							5	2									240	28	247	31	278
First Professional	212	13	2		9	3															
Advanced Degree	14	11	1		5	1															
School of Forestry																	42		51	1	52
Master's Candidates	41				1	1					8										
Doctoral Candidate	1																				
Law School							6										293	16	297	16	313
First Professional	289	16																			
Advanced Degree	2																				
School of Medicine	308	30															308	30	308	30	338
School of Nursing		9				4												11		13	13
SUBTOTAL	(1789)	(354)	(5)	(2)	(117)	(64)	(18)	(6)			(141)	(31)					(1842)	(383)	(2069)	(458)	(2527)
TOTAL	4670	2065	8	6	119	72	31	32	16	34	141	31	8	16			4731	2110	4992	2257	7249
Postdoctoral Medicine															401	15			401	15	416
Postdoctoral A. & S.															1				1		1
Paramedical Studies															90	199			90	199	289
Inter-Institutional															28	11			28	11	39
GRAND TOTAL	4670	2065	8	6	119	72	31	32	16	34	141	31	8	16	520	225	4731	2110	5512	2482	
																		6841		7994	7994

Enrollment Statistics March 15, 1969

	I				II				III				IV		V		VI		VII		
	Full-Time				*Part-Time*				*Non-Resident*				*Auditors*		*Other*		*Full-Time Equivalent*		(a) *Total Enrollment*		(b) *Total Enrollment by College & School*
	(a) Degree		(b) Non-Degree		(a) Degree		(b) Non-Degree		(a) Official Leave		(b) In Absentia										
	M	W	M	W	M	W	M	W	M	W	M	W	M	W	M	W	M	W	M	W	
UNDERGRADUATE ENROLLMENT																					
Woman's College		1376		4		9		17		43				7				1390		1456	1456
School of Nursing	2	260				3				3							2	262	2	266	268
Trinity College	2372		1		11		14		26				32				2383		2456		2456
School of Engineering	380	2					1		2								380	2	383	2	385
SUBTOTAL	(2754)	(1638)	(1)	(4)	(11)	(12)	(15)	(17)	(28)	(46)			(32)	(7)			(2765)	(1654)	(2841)	(1724)	(4565)
GRADUATE AND ENROLLMENT PROFESSIONAL																					
Graduate School			1	3			9	11						2			903	295	1033	355	1388°
Degree Candidates	855	267			79	42					89°	30°									
Divinity School			1				4	2					3				228	25	239	28	267
First Professional	205	11			9	2															
Advanced Degree	17	11				2															
School of Forestry																	38		43		43
Master's Candidates	35				2																
Doctoral Candidates	2						8				4										292
Law School																	273	14	278	14	
First Professional	268	14																			
Advanced Degree	2																				
School of Medicine	308	30															308	30	308	30	338
School of Nursing		10				3												11		13	13
SUBTOTAL	(1692)	(343)	(2)	(3)	(90)	(49)	(21)	(13)			(93°)	(30°)	(3)	(2)			(1750)	(375)	(1901)	(440)	(2341)°
TOTAL	4446	1981	3	7	101	61	36	30	28	46	93°	30°	35	9			4515	2029	4742	2164	6906°
Postdoctoral Medicine															401	15			401	15	416
Postdoctoral A. & S.																					
Paramedical Studies															96	202			96	202	298
Inter-Institutional															28	18			28	18	46
GRAND TOTAL	4446	1981	3	7	101	61	36	30	28	46	93°	30°	35	9	525	235	4515	2029	5267	2399	7666°
																		6544		7666°	

°Does not include 98 men and 22 women registered in absentia with no fees, no credit.

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Doctor of Forestry, A15
Doctor of Juridical Science, A15
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Master of Education, A11
Master of Forestry, A10
Master of Hospital Administration, A11
Master of Religious Education, A10
Master of Science, A11
Master of Science in Nursing, A10
Master of Theology, A14
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Bachelor of Arts, A17
Bachelor of Laws, A19
Bachelor of Science, A17
Bachelor of Science in Engineering, A17
Doctor of Education, A19
Doctor of Medicine, A19
Doctor of Philosophy, A19
Master of Arts, A18
Master of Arts in Teaching, A17
Master of Education, A18
Master of Forestry, A17
Master of Science, A18
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Bachelor of Science, U8
Bachelor of Science in Engineering, E6
Bachelor of Science in Nursing, N5
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Doctor of Forestry, F8
Doctor of Juridical Science, L8
Doctor of Medicine, M5
Doctor of Philosophy, G14
Master of Arts, G6
Master of Arts in Teaching, G11
Master of Business Administration, GBA3
Master of Comparative Law, L8
Master of Divinity, D6
Master of Education, G9
Master of Forestry, F4
Master of Hospital Administration, G12
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Awarded, June, 1968, A15
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Doctor of Juridical Science
Awarded, June, 1968, A15
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1969

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1970

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NOVEMBER

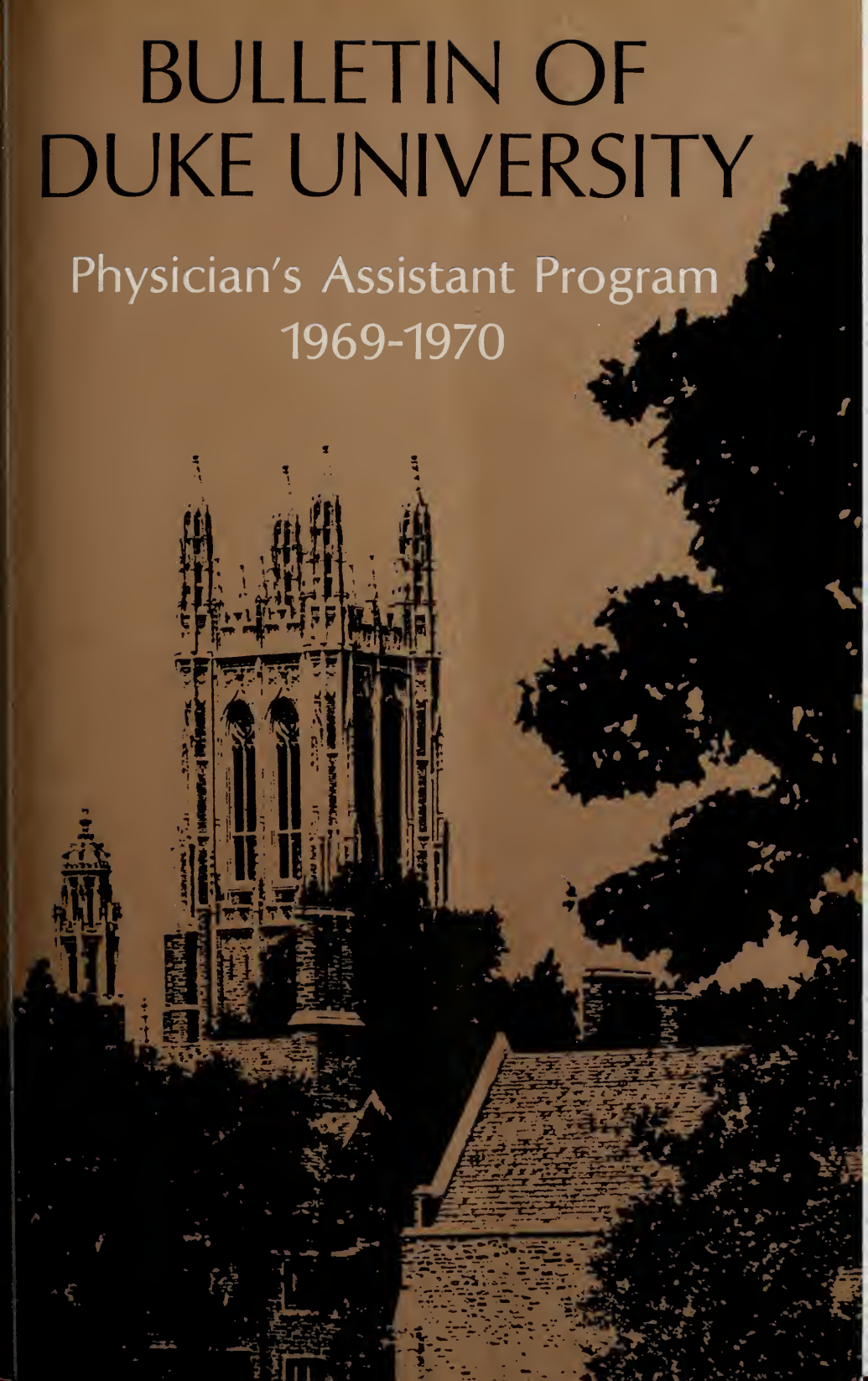
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BULLETIN OF DUKE UNIVERSITY

Physician's Assistant Program
1969-1970



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BULLETIN OF DUKE UNIVERSITY

Physician's Assistant Program 1969-1970

Durham, North Carolina 1969

Volume 41 June 1969 Number 8-D

The **Bulletin of Duke University** is published monthly except in July, August, September, and December by Duke University, Duke Station, Durham, N. C. 27706. Second-class postage paid at Durham, N. C.

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Physician's Assistant Program Calendar 1969-1970

1969

September

15 Monday—Registration 8:30 a.m. Mandatory for all students, 1:00 p.m. Orientation for new students
16 Tuesday—Classes begin
29 Monday—Board examinations begin—Second year students

October

2 Thursday—Board examinations end
3 Friday—Graduation ceremonies
22 Wednesday—Classes end—Phase One
23 Thursday—Examinations begin—Phase One
25 Saturday—Examinations end—Phase One
27 Monday—Classes begin—Phase Two

November

26 Wednesday—Thanksgiving recess begins—First year students only*

December

1 Monday—Classes resume
19 Friday—Christmas recess begins—First year students*

1970

January

5 Monday—Classes resume

March

27 Friday—Spring recess begins*

*A two-week vacation period will be scheduled for each student during the clinical experience. Arrangements for additional time off for Thanksgiving, Christmas, New Years, Easter, and Independence Day must be made with the faculty in charge of each rotation. There will be no other holidays observed.

April

6 Monday—Classes resume
25 Saturday—Classes end—Phase Two
27 Monday—Examinations begin—Phase Two

May

2 Saturday—Examinations end—Phase Two
4 Monday—Classes begin—Phase Three
11 Monday—Rotation schedule posted—First year students

June

10 Wednesday—Classes end—Phase Three
11 Thursday—Examinations begin—Phase Three
13 Saturday—Examinations end—Phase Three
22 Monday—Clinical rotations begin—First year students
26 Friday—In-hospital rotations end—Second year students
29 Monday—Administrative rotation begins—Second year students

July

24 Friday—Administrative rotation ends—Second year students
27 Monday—Outside physician rotation begins—Second year students

The Duke Medical Center serves as the center of the teaching program.



Officers of Administration

General Administration

Douglas Maitland Knight, Ph.D., LL.D., Litt.D., L.H.D., *President of the University*
*Robert Taylor Cole, Ph.D., *Provost*
Frank Leon Ashmore, A.B., *Vice President for Institutional Advancement*
Gerhard Chester Henricksen, M.A., C.P.A., *Vice President and Treasurer*
Everett Harold Hopkins, M.A., LL.D., *Vice President for Regional Programs, Assistant Provost*
Charles B. Huestis, *Vice President for Business and Finance*
† Barnes Woodhall, M.D., *Associate Provost*
Frank Traver de Vyver, Ph.D., *Vice Provost*
Harold Walter Lewis, Ph.D., *Vice Provost and Dean of Arts and Sciences*
Richard Lionel Predmore, D.M.L., *Vice Provost and Dean of the Graduate School*
Craufurd David Goodwin, Ph.D., *Vice Provost*
William J. Griffith, A.B., *Assistant to the Provost in the Area of Student Affairs and Assistant Dean of Arts and Sciences*
Benjamin Edward Powell, Ph.D., *Librarian*
Richard Lovejoy Tuthill, Ed.D., *University Registrar*
Rufus H. Powell, LL.B., *Secretary of the University*
Stephen Cannada Harward, A.B., C.P.A., *Assistant Secretary and Controller*
Edwin Constant Bryson, LL.B., *University Counsel*

Duke University Medical Center

William G. Anlyan, M.D., *Associate Provost in charge of Medical Affairs and Dean, School of Medicine*

*Through 1-15-69; Marcus E. Hobbs elected Provost.
†Through 1-15-69; William G. Anlyan, M.D. elected Associate Provost. Dr. Barnes Woodhall appointed Chancellor Pro-tem.

E. Harvey Estes, Jr., M.D., *Professor and Chairman, Department of Community Health Sciences*
D. Robert Howard, M.D., *Assistant Professor and Director, Physician's Assistant Program*
James C. Mau, B.S., *Administrative Director, Physician's Assistant Program*
David E. Lewis, *Associate and Director of Education, Physician's Assistant Program*

Technical Staff

Eugene A. Stead, Jr., M.D., *Professor of Medicine, Chief Advisory Consultant*
Louis R. Pondy, Ph.D., *Associate Professor of Business Administration, Director of Evaluations*
Kathleen G. Andreoli, R.N., M.S., N.Ed., *Chief of Course Development, Educational Coordinator, Physician's Assistant Program*
Paul S. Toth, B.S., *Physician's Assistant, Coordinator of Surgical Rotations, Physician's Assistant Program*
John A. Braun, *Physician's Assistant, Coordinator of Medical Rotations, Physician's Assistant Program*

Student participation in the classroom setting encourages interest in learning the concepts of diseases.



Faculty and Staff

W. Banks Anderson, Jr., M.D. (Harvard, 1956), *Associate Professor of Ophthalmology*

Kathleen G. Andreoli, R.N., M.S., N.Ed. (Vanderbilt, 1959), *Chief of Course Development, Educational Coordinator, Physician's Assistant Program*

William G. Anlyan, M.D. (Yale, 1949), *Professor of Surgery and Dean of the School of Medicine*

Jay Morris Arena, M.D. (Duke, 1932), *Professor of Pediatrics*

Morton D. Bogdonoff, M.D. (Cornell, 1948), *Professor of Medicine and Assistant Dean for Graduate Medical Education*

John A. Braun, Physician's Assistant (Duke, 1968), *Coordinator of Medical Rotations, Physician's Assistant Program*

Rubin Bressler, M.D. (Duke, 1957), *Professor of Medicine and Endocrinology and Pharmacology; Director, Diabetic Clinic*

George W. Brumley, Jr., M.D. (Duke, 1960), *Assistant Professor of Pediatrics*

Arthur C. Chandler, Jr., M.D. (Duke, 1959), *Assistant Professor of Ophthalmology and Associate in Anatomy*

James R. Clapp, M.D. (North Carolina, 1957), *Associate Professor of Medicine*

Franklin P. Dalton, M.D. (Duke, 1960), *Associate of Community Health Sciences and Associate in Medicine*

William J. A. DeMaria, M.D. (Duke, 1948), *Associate Professor of Pediatrics, Professor of Community Health Sciences, and Assistant Dean in charge of Continuing Education*

E. Harvey Estes, Jr., M.D. (Emory, 1947), *Professor of Community Health Sciences and Chairman of the Department; Professor of Medicine*

James F. Glenn, M.D. (Duke, 1953), *Professor of Urology and Chief of the Division of Urologic Surgery*

J. Leonard Goldner, M.D. (Nebraska, 1943), *Professor of Orthopaedic Surgery and Chief of the Division*

J. Caulie Gunnells, M.D. (South Carolina, 1956), *Assistant Professor of Medicine*

Charles P. Hayes, M.D. (Duke, 1959), *Assistant Professor of Medicine*

D. Robert Howard, M.D. (Wisconsin, 1962), *Assistant Professor of Community Health Sciences and Director, Physician's Assistant Program*

William R. Hudson, M.D. (Bowman Gray, 1951), *Professor of Otolaryngology and Chief of the Division*

Charles Johnson, M.D. (Howard, 1963), *Clinical Associate in Medicine*

Samuel Lawrence Katz, M.D. (Harvard, 1952), *Professor of Pediatrics and Chairman of the Department*

Walter Kempner, M.D. (Heidelberg, 1927), *Professor of Medicine*

Grace P. Kerby, M.D. (Duke, 1946), *Professor of Medicine*

Betty W. Kernodle, R.R.L., A.B. (Duke, 1940), *Director, Medical Record Department*

Kaye H. Kilburn, M.D. (Utah, 1954), *Associate Professor of Medicine*

Johannes A. Kylstra, M.D. (Leiden, 1952), *Associate Professor of Medicine and Assistant Professor of Physiology*

Harold E. Lebovitz, M.D. (Pittsburgh, 1956), *Associate Professor of Medicine and Director of Endocrinology*

John C. LeMay, D.V.M. (Georgia, 1959), *Associate Professor of Veterinary Medicine and Chairman of the Department*

Richard G. Lester, M.D. (Columbia, 1948), *Professor of Radiology and Chairman of the Department*

David E. Lewis, B.S., M.A. (Northern Michigan, 1968), *Associate of Community Health Sciences and Director of Education, Physician's Assistant Program*

E. Croft Long, M.B., B.S., Ph.D. (London, 1952, 1957), *Associate in Pediatrics; Associate Professor of Physiology; Professor of Community Health Sciences; and Associate Dean for Undergraduate Medical Education*

James C. Mau, B.S. (Iowa, 1957), *Administrative Director, Physician's Assistant Program*

F. Maxton Mauney, Jr., M.D. (Duke, 1959), *Assistant Professor of Surgery and Assistant Professor of Community Health Sciences*

James A. McFarland, M.D. (Johns Hopkins, 1956), *Assistant Professor of Community Health Sciences*

Henry D. McIntosh, M.D. (Pennsylvania, 1950), *Professor of Medicine*

John J. McQueary, Physician's Assistant (Duke, 1968), *Instructor in Physician's Assistant Program*

Richard A. Mladick, M.D. (Northwestern, 1959), *Assistant Professor of Plastic Surgery*

James J. Morris, M.D. (State Univ. of New York, 1959), *Associate Professor of Medicine*

Marc J. Musser, M.D. (Wisconsin, 1934), *Professor of Medicine; and Executive Director, Regional Medical Program of North Carolina*

Guy L. Odom, M.D. (Tulane, 1933), *Professor of Neurosurgery and Chairman, Division of Neurosurgery*

Suydam Osterhout, M.D. (Duke, 1950), Ph.D. (Rockefeller Inst., 1959), *Director, Microbiology Laboratories; Associate Professor of Microbiology; Assistant Professor of Medicine; and Assistant Dean, Admissions*

Roy T. Parker, M.D. (Med. Coll. of Virginia, 1944), *Professor and Chairman of Obstetrics and Gynecology and Professor of Endocrinology*

F. M. Simmons Patterson, M.D. (Pennsylvania, 1939), *Assistant Professor of Surgery*

William P. J. Peete, M.D. (Harvard, 1947), *Professor of Surgery*

Kenneth L. Pickrell, M.D. (Johns Hopkins, 1935), *Professor of Plastic and Maxillofacial Surgery and Chief of the Division*

Louis R. Pondy, Ph.D. (Carnegie Institute, 1966), *Associate Professor of Community Health Sciences and Associate Professor of Business Administration*

Richard M. Portwood, M.D. (Southwestern, 1954), *Director of Student Health; Assistant Professor of Medicine; and Assistant Professor of Community Health Sciences*

Jose Ramirez-Rivera, M.D. (Yale, 1953), *Associate Professor of Medicine*

John B. Reckless, M.B., Ch.B. (Univ. of Birmingham, England, 1954), *Associate Professor of Psychiatry*

Roscoe R. Robinson, M.D. (Oklahoma, 1954), *Associate Professor of Medicine*

R. Wayne Rundles, M.D. (Duke, 1940), *Professor of Medicine*

Jerome Ruskin, M.D. (Albert Einstein, 1960), *Associate in Medicine*

David C. Sabiston, Jr., M.D. (Johns Hopkins, 1947), *Professor of Surgery and Chairman of the Department*

Herbert A. Saltzman, M.D. (Jefferson, 1952), *Associate Professor of Medicine*

B. F. Sherwood, D.V.M. (Georgia, 1959), *Associate in Veterinary Medicine*

William W. Shingleton, M.D. (Bowman Gray, 1943), *Professor of Surgery; Chief of the Division of General Surgery; and Chairman, Undergraduate Cancer Training Program*

James B. Sidbury, Jr., M.D. (Columbia, 1947), *Professor of Pediatrics; Director of Clinical Research Unit; and Professor of Endocrinology*

Herbert O. Sieker, M.D. (Washington Univ., 1948), *Professor of Medicine*

Harold R. Silberman, M.D. (Washington Univ., 1956), *Assistant Professor of Medicine*

William K. Sims, *Manager of the Surgical Electronic Shop*

C. William Smith, B. S. (Virginia, 1956), *Administrative Director of Community Health Sciences and Director of the Medical Center Data Processing*

David T. Smith, M.D. (Johns Hopkins, 1922), *Professor Emeritus of Community Health Sciences; Associate Professor Emeritus of Medicine; and James B. Duke Professor Emeritus of Microbiology*

Wirt Smith, M.D. (Texas, 1951), *Associate Professor of Experimental Surgery*

George H. Spooner, Ph.D. (North Carolina, 1958), *Assistant Professor of Clinical Pathology*

Eugene Anson Stead, Jr., M.D. (Emory, 1932), *Florence McAlister Professor of Medicine*

Juan Tomasini-Flores, M.D. (Madrid, 1962), *Associate in Medicine*

Howard K. Thompson, M.D. (Columbia, 1962), *Assistant Professor of Medicine and Assistant Professor of Biomathematics*

Thomas T. Thompson, M.D. (Med. Coll. of Virginia, 1964), *Associate in Radiology*

George T. Tindall, M.D. (Johns Hopkins, 1952), *Associate Professor of Neurosurgery; Chief, Neurosurgical Service, V.A. Hospital, Durham, N.C.*

John P. Tindall, M.D. (Duke, 1959), *Assistant Professor of Dermatology*

Paul Toth, B.S., Physician's Assistant (Duke, 1968), *Coordinator of Surgical Rotations, Physician's Assistant Program*

Malcolm P. Tyor, M.D. (Duke, 1946), *Professor of Medicine*

Javad Vakilzadeh, M.P.H., D.V.M. (Tehran, 1952), *Associate of Veterinary Medicine*

Andrew G. Wallace, M.D. (Duke, 1959), *Associate Professor of Medicine*

Barnes Woodhall, M.D. (Johns Hopkins, 1930), *Professor of Neurosurgery*

James B. Wyngaarden, M.D. (Michigan, 1948), *Hanes Professor of Medicine and Chairman of the Department*

General Information

History and Development

Duke University's concept of the Physician's Assistant Program developed in the early 1960's as a result of an unsuccessful attempt to initiate a postgraduate physician's education program. When Dr. Eugene A. Stead, who was then chairman of the Department of Medicine at Duke University Medical Center and the founder of the Physician's Assistant Program, analyzed the reasons for the failure of the postgraduate physician education program, he discovered that the practicing physicians had no time which they could reasonably set aside for the purpose of education. Dr. Stead felt that perhaps ancillary health personnel could be economically trained to competently assume many of the physician's tasks, thereby giving him more time. After several months of research Dr. Stead began to notice ancillary personnel were already being trained to do many technical jobs within the Medical Center which had previously fallen within the realm of physician responsibility. The needs for medical guidance and coordination of these programs was immediately self-evident.

In accordance with these observations, on April 17, 1965, Dr. Barnes Woodhall, then vice-provost for medical affairs, Duke University, appointed an *ad hoc* committee chaired by Dr. Andrew G. Wallace, assistant professor of medicine, to look into these programs. This committee met on four occasions during the spring of 1965 and came to the

following conclusions: (1) The need for extensive numbers of highly trained technical personnel existed both within and outside the Medical Center; (2) Two types of allied health personnel were needed, one very highly skilled and limited to a specific area and the other a more advanced individual with a broad and sophisticated background (i.e., vocational and professional); (3) There existed the need for a core curriculum to allow for academic advancement and variation in careers; (4) There must be an attempt to define the specific needs to resolve the individual manpower problems; (5) There must be a method of attracting qualified applicants and providing them with a functional and compact curriculum. As a result of these conclusions, a report was made to the vice provost and this report is reproduced, in part, in the following paragraphs.

> The situation which generated the ideas set forth in this report can be stated quite simply: *personnel in the health field are too few in number and inadequately trained to meet the demands placed on the medical profession.* In our view, medical schools and nursing schools, as presently structured, cannot supply sufficient numbers of doctors or career-oriented nurses to meet this demand. Furthermore, no workable solution to this problem can be predicted solely on the reshuffling of available talent.
>
> The proposal to be outlined calls for the definition of a new member of the health team called a "Physician's Assistant." The physician's assistant is seen as a new category within the structure of the health field, designed to provide a career opportunity for men functioning under the direction of doctors and with greater capabilities and growth potential than informally trained technicians. . . . The physician's assistant would receive most of his training within a clinical discipline of defined scope, in order to develop quality of performance and an understanding of illnesses in the field.
>
> The task then is to provide an educational framework designed to attract career-oriented men and supply them with the skills to function effectively as a physician's assistant. Selection of students and curriculum should reflect this goal. It is important, we believe, to differentiate this program and its goals from previously unsuccessful attempts to develop male nurses. This program calls for intensive training in areas which complement available talents without attempting to replace available talents. Training and salary potential should be consistent with a career in the health field and should reflect the ability of trained assistants to increase the earning power of their employer by an amount appropriate to their projected salary.

On July 1, 1965, initial limited funding was made available by the National Heart Institute to further evaluate the prospect of a physician's assistant. On October 4, 1965, four candidates, all of whom were ex-Navy corpsmen, were chosen as initial students.

On February 1, 1966, a second *ad hoc* committee was appointed by Dr. William G. Anlyan, dean of Duke Medical School, which was chaired by Dr. Stead. The purpose of this committee was to further explore the development of physician's assistants, including the types of projected roles, the educational background requirements, and the scope of their responsibilities and activities. Five days later Dr. Stead read a preview of the program before the 62nd Annual Congress on Medical Education, sponsored by the American Medical Association, in Chicago.

This new committee first met under Dr. Stead's chairmanship on February 16, 1966, at which time the progress of the program was reviewed, and three primary questions were raised. These were: (1) How much of the plan for personnel training is practical and possible? (2) What sort of certification should be given to the student? (3) What provisions should be made for additional training for the student, as determined by his ultimate employment?

At the committee's second meeting the following month, three criteria were cited as the main determining factors in the ultimate success of the concept. These were: (1) physician's acceptance of physician's assistants, (2) society's acceptance of physician's assistants, and (3) the physician's assistant's individual competence.

Throughout 1966, meetings of the second committee were spent in providing a continuing review of the program, researching possible sources of funding, and beginning an in-depth search into the legal aspects of the use and development of such personnel.

On April 13, 1966, in response to an inquiry from the committee, the attorney general's office ruled in reference to the Nursing Practice Act that "Nothing in this article shall be construed in any way to prohibit or limit performance by any person of such duties as specified mechanical acts in the physical care of a patient when such care and activities do not require the knowledge and skill of a registered nurse or licensed practical nurse, *or when such care and activities are performed under the orders or directions of a licensed physician, licensed dentist, or registered nurse.*" It was the committee's recommendation at the time that regardless of this interpretation, efforts should be made to move in the direction of modifying the Medical Practice Act so that it would allow the physician more leeway in the delegation of certain tasks.

With this information in mind, tasks that could be accomplished by an assistant were defined and a seemingly appropriate curriculum was developed. Also considered in the development of the program and the curriculum was the fact that each physician is different from every other physician to a degree that the ultimate definition of the role of an assistant would be impossible. The emphasis was, therefore, placed on developing a training program that would provide a core vocabulary and skills for physician's assistants with the clinical emphasis on the development of an assistant for the general practitioner or general internist. It was recog-

nized that the final training of each physician's assistant must be provided by the physician with whom he worked.

In September, 1967, the Department of Community Health Sciences assumed administration of the Physician's Assistant Program under the direction of the department chairman, Dr. E. Harvey Estes, Jr. On October 1, 1967, the program graduated its first three students, all of whom were offered and accepted employment in the Medical Center. In July, 1968, five more students who had attended the course on a part-time basis were graduated and on September 26, 1968, the second class of nine students received certification. To date the program has seventeen graduates and has thirty-three students enrolled on a full or part-time basis.

Future plans call for an increasing enrollment each year to a total class size of 100 students to be realized by 1972.

Relationship to the University

The students in the Physician's Assistant Program are registered as special students and are not considered as Duke University undergraduate students. At the completion of the two year training program the students are given a certificate of accomplishment by the Medical Center. This is not a degree, and though the students are given credit for their courses and receive transcripts of their grades from the university, there is as yet no means of application of these credits toward a degree through Duke University. Efforts are currently in progress toward establishing a B.S. level degree, through our own undergraduate college and other colleges in the area.

Legal Status

Almost every physician who considers using a physician's assistant inquires about the legal status of such individuals. There is also concern among hospitals and hospital administrators. Because of this universal interest and because of the need for an orderly program development two conferences have been held at Duke in which this was a major topic. The first meeting was attended by leaders of the Medical Society of the State of North Carolina, including representatives of the Board of Medical Examiners, the Legislative Committee, and the Medico-legal Committee. The North Carolina Nurses' Association was also represented as was the American Medical Association and several individuals who represented schools planning the development of such programs. The second meeting

was held in the fall of 1968, and involved persons planning such programs in other hospitals and universities.

In addition to the concern of the individual physicians and hospital administrators regarding new manpower categories, there is also a legitimate concern on the part of those considering such training programs and the medical profession as a whole. The development of such programs without established guidelines, approved and supervised by the medical and nursing profession, will almost certainly lead to chaos. The graduate of one program will not be at all equivalent to the graduate of another, and the public will in all likelihood be served poorly. Because of the number of developing programs and their continuous multiplication, guidelines for curriculum and for legal control are of utmost importance.

Initially it was recognized that an assistant could serve in either a *dependent* or an *independent* capacity. It was generally conceded that on a mass scale the creation of an independent assistant would cause as many problems as it would solve. Experience has adequately demonstrated that although workable in small numbers, independent members at the intermediate level on a health care team end up competing with, rather than complementing, the available health services. Recognition that the development of an independent assistant would be professionally undesirable was accompanied by the realization that increased legal complications would also surround such a development. Consequent to these and other factors, the physician's assistant has evolved along the lines of a dependent professional assistant who participates in various medical and health functions. Time has demonstrated the wisdom of this choice. The legal advantages were soon realized when the attorney general of North Carolina ruled that the physician's assistant could, within the confines of the law, carry out virtually every task assigned by a physician and the only limitation on the assigned functions concerned diagnosis and prescription of care—two functions already ruled out by his dependent role. Beyond these functional limitations, all activity control is under the direction of the physician-employer.

Further development of the legal status, however, is of primary importance. It is clear that the physician must be responsible for the actions of his own dependent assistant, but there are certain legal precedents which make it wise to work toward a legal recognition of this and other new categories. Licensure and control are closely associated with legal definition. Since the wise or unwise use of such personnel is more likely to be a function of the physician rather than the assistant, some have suggested that the physician user should be licensed rather than the assistant. It is also true that legal definition should be broad enough to encompass a variety of new manpower categories now under development. To consider each on an independent *ad hoc* basis will certainly lead to chaotic rules and regulations.

A scheme suggested as a result of the 1968 conference in Durham, North Carolina, seems workable, and efforts are under way for its implementation. According to this scheme, a permanent committee would be formed, having representatives from medicine, nursing, hospital administration, and the public, and would report to the State Board of Medical Examiners. This committee would be responsible for considering all new manpower training programs in the state. The director of a planned new training program would apply for approval, and submit a summary of its objectives, its faculty, its facilities, the source and selection of candidates, etc., as a part of the application. The committee would tentatively approve or disapprove the program on the basis of this application. If tentatively approved, the program director would submit twice yearly reports on the program, including names, addresses, and employers of all trainees and/or graduates. Each physician (or other health care professional) utilizing one or more trainees or graduates would submit a statement regarding the performance of the assistant. After two years of such observation, the program would receive approval and be renewed every five years. The advantages of the scheme are (*a*) it makes each manpower innovation totally visible to all the existing professional categories, (*b*) it allows an innovation to be eliminated if unproductive or unreliable, and (*c*) it allows flexibility and change in a program before the program is fixed by law. Changes in the laws of the state will still be necessary; and the design of model legislation, applicable to any state, will be a part of the plan. To this time there have been no obstacles in the utilization of graduates in any state.

Current Status and Future Goals

The Physician's Assistant Program is designed to develop a new category of personnel within the structure of the health field who will function as allied health professionals under the direct supervision of physicians. Their sole function will be to assist physicians in their clinical and/or research endeavors.

The physician's assistant is trained to perform responsibly and reliably certain carefully defined skills. In the clinical setting, he learns to take patient histories, do physical examinations, start and regulate intravenous infusions, intubate the G.I. tract, do gastric lavages, biopsies, lumbar punctures, and other procedures classically performed by the doctor. He is trained to monitor vital signs, give medications, and keep progress records as classically performed by nurses. He is also taught to operate certain diagnostic and therapeutic instruments, such as electrocardiographs, respirators, cardiac monitors, and defibrillators, as well as to carry out extensive laboratory studies as commonly done by technicians.



A graduate physician's assistant carries out intricate and highly technical patient diagnostic procedures.

The status of the physician's assistant can best be described as that of an intermediate level professional with sophisticated and extensive technical capabilities. The physician's assistant, in working as a dependent assistant to a physician, provides the physician with many services which supplement available health team talents, thus freeing the physician from those tasks which do not demand his level of education, training, and background for more valuable endeavors.

The majority of education in the program is offered at the Duke University Medical Center and at the affiliated Veterans Hospital. Other hospitals located in Durham and experiences in physicians' offices and community clinics are also part of the training program.

As the Physician's Assistant Program developed under the auspices of the Department of Medicine, other departments eagerly expressed their interest in this type of intermediate level professional to fulfill the manpower needs that exist in virtually every medical and surgical specialty and subspecialty.

Students now have options open in medicine, surgery, and most medical and surgical subspecialties. Further expansion into radiology, psychiatry, pediatrics and obstetrics is currently under way. By providing a generalized but comprehensive background in the didactic portion of the program it is possible to utilize the physician's assstant in virtually every specialty and subspecialty by altering only the contents of the clinical portion. Even alterations to fulfill specialty requirements can follow the same basic clinical structure as developed in medicine, the only difference being a decrease in the scope of material covered and an increase in the depth of learning.

Malpractice Insurance

In this day of widespread litigation the question of malpractice insurance frequently arises. However, as the physician's assistant works as a dependent assistant he is covered under the physician's insurance that covers the rest of his employees. None of the physicians who have hired graduates of the Duke program have had to pay any increase in premiums for this service.

Graduates of the Physician's Assistant Program have the opportunity of pursuing a career in health care administration, direct patient care, research, or any combination of these.



Curriculum

The educational curriculum for the training of physician's assistants covers a period of twenty-four months. Even though applicants may have taken some similar courses in their previous training they are requested to take all of the courses in the program. The reasons for this are to ensure uniformity of the graduates; because the emphasis of the content is directed toward the program goals and may, therefore, be different than other courses; and because experience has demonstrated that the courses serve as a good means for review. In those situations where an applicant seems so well qualified that nothing would be gained by participation in a course, he is given the opportunity to take the necessary examinations and upon satisfactory completion of these is allowed to omit the course. The educational program, though similar in many respects to other medically related programs, is intended to provide the necessary background for the development of a career as a physician's assistant and should not be considered as a stepping stone toward the eventual realization of a Doctor of Medicine degree.

Preclinical Curriculum

The preclinical curriculum covers an academic period of thirty-six weeks and is divided into three phases rather than two semesters. The first and third phases are each six weeks in duration and the second phase, twenty-four weeks. For students going into medicine, surgery, pediatrics, and medical and surgery subspecialties all courses given are required

courses and no elective courses are available. See the section on Courses of Instruction on pages 29-32 of this *Bulletin* for course descriptions.

Preclinical Schedule

Course Number	*Hours Lecture*	*Hours Laboratory*	*Total Hours*	*Credits*
Phase I (six weeks)				
PA 101	18	0	18	1
PA 103	12	36	48	2
PA 105	18	0	18	1
PA 107	18	0	18	1
PA 109	30	0	30	1
Phase II (24 weeks)				
PA 131	24	0	24	1
PA 133	96	0	96	4
PA 135	72	0	72	3
PA 137	240	48	288	6
PA 139	16	32	48	2
PA 141	16	32	48	2
PA 143	16	32	48	2
PA 145	48	0	48	2
PA 147	0	48	48	1
Phase III (6 weeks)				
PA 181	24	0	24	1
PA 183	18	0	18	1
PA 185	12	60	72	2
PA 187	12	12	24	1
PA 189	18	0	18	1
PA 191	24	0	24	1
Total (36 weeks)	732	300	1032	36

Clinical Curriculum

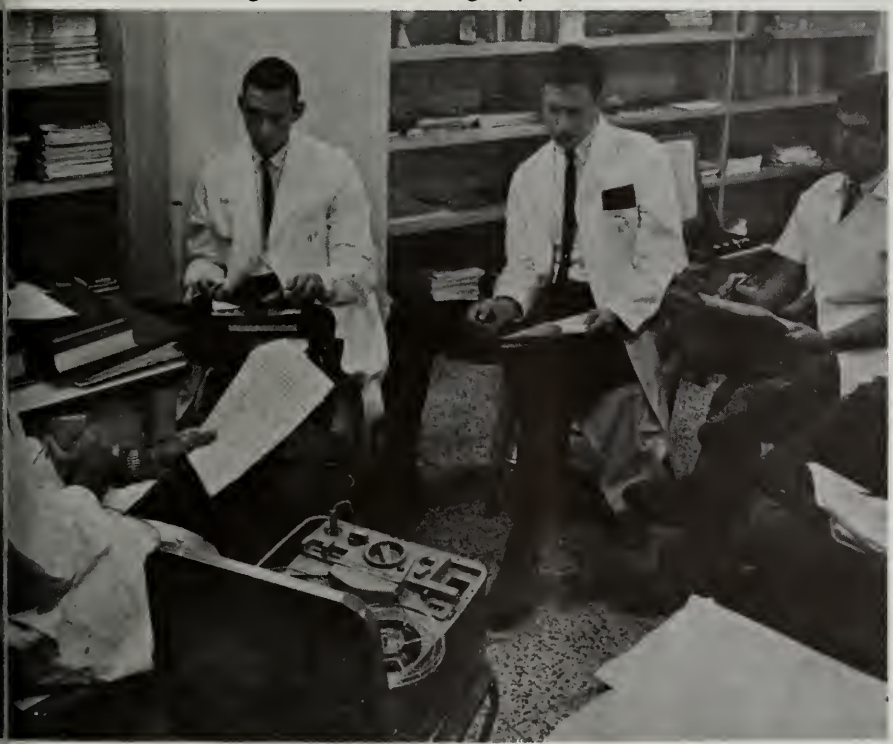
The clinical curriculum of fifteen months consists of thirty-eight weeks of required rotations, twenty-four weeks of elective rotations, and two weeks for vacation. It is during this aspect of the training program that the student is expected to develop expertise in the application of his preclinical learning. See the section on Courses of Instruction, pages 29-32, for course descriptions.

Clinical Schedule

Hospital Rotations

	Duration	*Credits*
Inpatient Service	8 weeks	6
Outpatient Service	8 weeks	6
Health Clinic	4 weeks	3
Library Research	2 weeks	1
Pulmonary Function, Inhalation Therapy	4 weeks	3
Elective	8 weeks	6
Elective	8 weeks	6
Elective	8 weeks	6
Outside Rotations		
Administration	4 weeks	3
Outside Physician	8 weeks	6
Total	62 weeks	46

Clinical teaching is done in small groups with the house staff.



Resources for Study

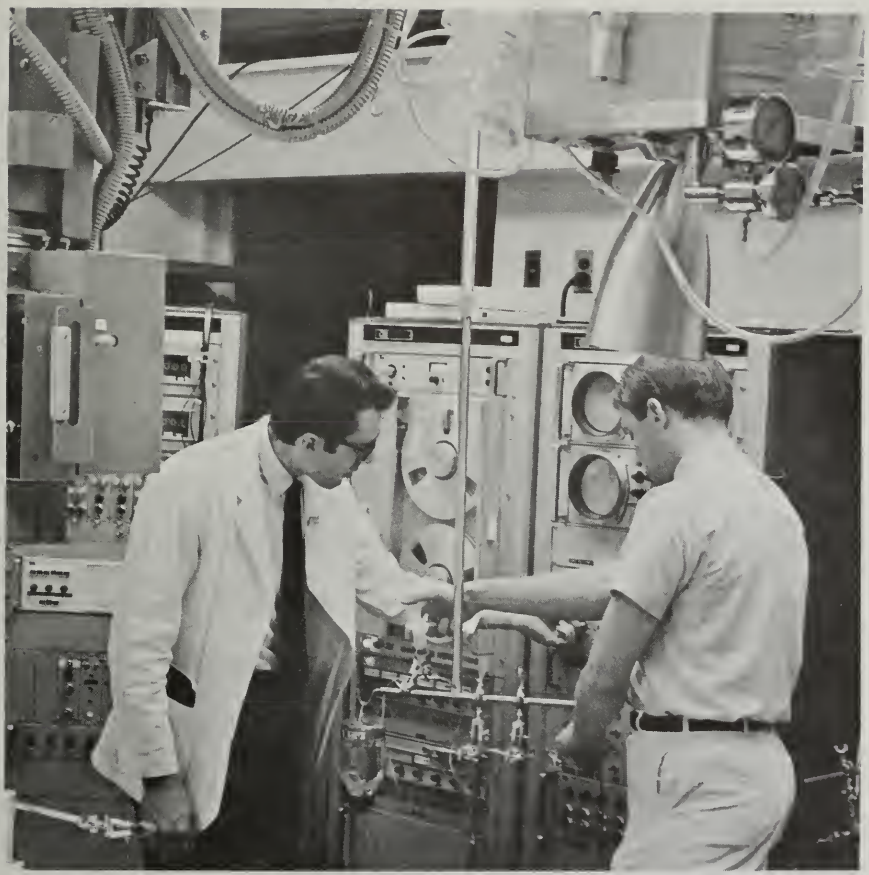
Medical Center Library

The Medical Center Library, located in the Davison Building, attempts to provide all services and collections necessary to further educational, research and clinical activities in the medical field. Extensive reference and bibliographical services are provided. The collection exceeds 90,000 volumes and 1,700 periodicals are received currently.

The Trent Collection in the history of medicine is an unusually fine one, rich in manuscripts and rare books, and provides an opportunity for study and research as well as casual reading in the field.

Duke Hospital

Duke Hospital is an integral part of the Medical Center and currently has 800 beds and 23 bassinets. The hospital performs the dual functions of professional education and patient care. Comprehensive diagnostic and treatment facilities are provided. Different levels of patient care are provided, ranging from the intensive care units, through the conventional treatment sections to minimal care units. Private, semiprivate, and ward accommodations are available. Over 20,000 patients are admitted each year. The approximate daily census by service is as follows:



A graduate physician's assistant utilizes his training and background in the development and implementation of a modern computerized cardiac research center.

Surgery, including the surgical subspecialties, 310; Medicine, 205; Pediatrics, 55; Psychiatry, 50; and Obstetrics-Gynecology, 50. Surgical facilities include 18 operating rooms where over 15,000 surgical procedures are performed annually. Four obstetrical delivery rooms are maintained. Special diagnostic and treatment units are also available, such as the recovery room, cardiac catheterization laboratory, and hyperbaric oxygenation chambers.

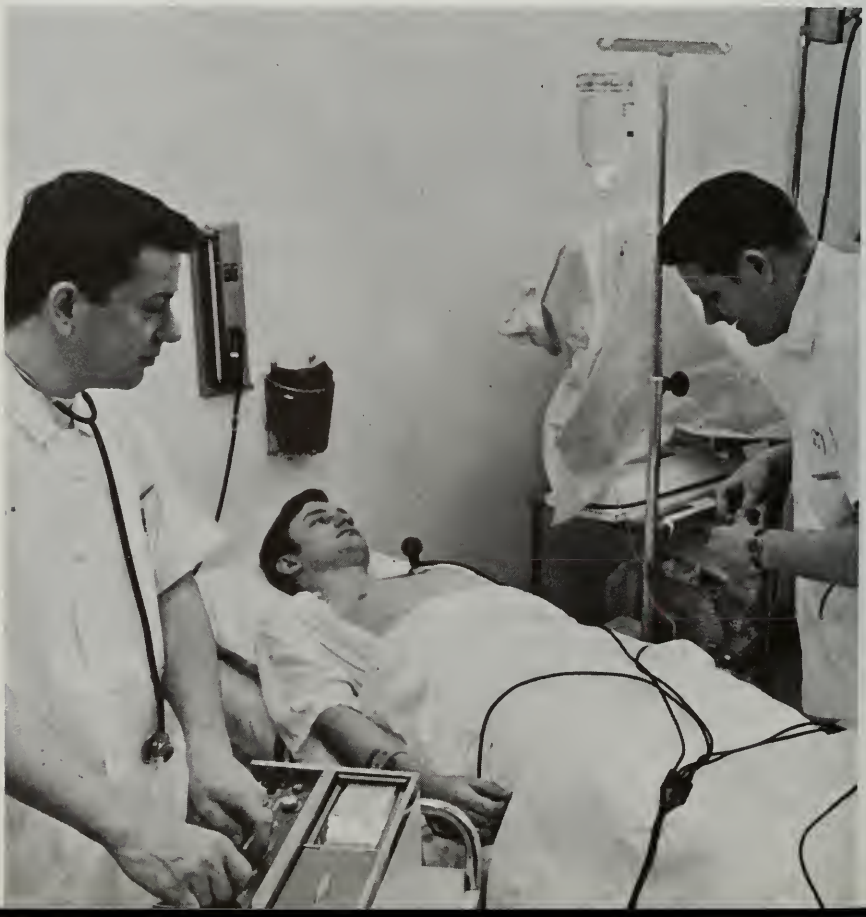
The outpatient services comprise the public clinics, the private patient clinics, the employee health office, and the emergency service. Over 250,000 visits are made each year to these units. Close working relationships between Duke Hospital and other various outside health agencies enhance continued care of the patients.

The clinical faculty of the Duke University School of Medicine forms the medical staff of Duke Hospital. Thus this group not only participates in both undergraduate and graduate medical education but also in active medical practice within the hospital and the private diagnostic clinics. Duke Hospital is approved for internship and residency training by the Council on Medical Education and Hospitals of the American Medical Association and conducts an active educational program involving approximately 340 house staff members. The hospital is fully accredited by the Joint Committee on Accreditation of Hospitals.

Veterans Hospital

The Durham Veterans Administration Hospital is located within walking distance of the School of Medicine. The full-time professional staff are all members of the faculty of Duke University School of Medicine. This 489-bed general hospital provides an opportunity for closely integrated student teaching and house staff training.

During the clinical rotations the students develop skills in technical procedures.



Student Life

Living Accommodations

Housing

Students are responsible for making their own living arrangements. Even though no campus housing is available, suitable quarters can be rented in areas near the Medical Center.

Dining Facilities

Several dining facilities located in and near the Medical Center are available to the students.

In the Duke University Union Building there are two cafeterias offering multiple choice menus and a dining area, the Oak Room, which offers full menus and *à la carte* items.

Student Health Services

Students are treated through the Employee Health Clinic during the day and in the emergency room after 5:00 p.m. They have the opportunity of obtaining additional health coverage through the North Carolina Blue Cross & Blue Shield Association policy made available to

students and employees of the University and Medical Center. Students will be given a complete physical examination at the beginning of the first year, which includes a roentgen examination of the chest and various other laboratory studies. Annual physical examinations thereafter are also required.

Organizations

There are two organizations open to students enrolled in the Physician's Assistant Program. Participation in one of these, the Student Government Society, is mandatory and costs ten dollars per year. In the professional organization, the American Association of Physician's Assistants, participation is on a voluntary basis by both students and graduates. Fees for participation in the latter organization are twelve dollars per year for students and twenty dollars per year for graduates.

The Student Government Society officers include the president, a secretary, and class presidents and representatives from each class elected by the student body and the individual classes respectively. An executive committee, chaired by the president and composed of the secretary and the class presidents, serves as the official student voice of the Physician's Assistant Program. The responsibilities of the Student Government Society include the ability to represent student views and express opinions on various subjects to the faculty and administration; to act as a service organization for the student body, responsible for student services deemed feasible by the organization and approved by the Physician's Assistant Program administrators; and to assist in the orientation of the freshmen students.

A major responsibility of the Student Government Society is the preservation of the honor code which is a proud tradition of the Duke University Medical Center. The prevailing opinion has been that if a student cannot withstand the relatively minor stresses and temptations arising during his training, he can never be expected to act with integrity under the much greater demands and responsibilities he will encounter as a physician's assistant. Thus, a strong honor system exists to develop and maintain honesty during the course of training. Each student, on or before entering the Physician's Assistant Program, is required to sign a statement expressing his understanding and familiarity with the honor code and his willingness to abide by its provisions. The Student Government Society maintains an Honor Council, chaired by the president and comprised of the secretary and the class presidents and representatives to try students accused of any infringements of the honor code. The program administration serves to recommend the disposition of a student found guilty by the honor council.

The professional organization, incorporated in 1968 as the American Association of Physician's Assistants (AAPA), provides an active professional program with the cooperation of the students and graduates directed toward the objectives of program development, professional ethics and guidelines, and continuing education.

Motor Vehicle Registration

Each motor vehicle operated on the Duke University campuses by students must be registered at 08 Social Science Building within five calendar days after operation on the campus begins, and thereafter must display the proper registration emblem.

Students must pay an annual parking fee of $30.00 for each motor vehicle and $10.00 for each motorcycle, motorbike, or motor scooter.

To register a vehicle, the student must present the following documents: (1) a state vehicle registration certificate; (2) a valid driver's license, and (3) satisfactory evidence of automobile liability insurance as required by North Carolina law—$10,000 per person, $20,000 per accident for personal injuries and $5,000 property damage.

Parking, traffic, and safety regulations will be given each student who registers his vehicle. Students are expected to abide by these regulations.

The emphasis of the curriculum is in directing the graduate to assist the physicians in their daily patient care.



Financial Information

Tuition and Fees

At the present time students of the Physician's Assistant Program are classified as Duke University Special Students and are therefore not required to pay tuition. The only required fees are the five dollar application fee, a five dollar registration fee payable at the beginning of each year, and a ten dollar membership fee payable each year for participation in the Student Government Society. The application fee must accompany the application forms, and the other fees will be collected on the day of registration. An additional fee of ten dollars will be charged to students who do not register at the designated time.

Student Expenses

The following table represents an estimate of a student's necessary expenses for the twelve month academic year. Allowances for clothing, travel, and other miscellaneous expenses must be added to this estimate. These of course will vary considerably depending on the needs and tastes of the individual.

Room—single	$ 720
Room—married	1,450

Board (per adult)	600
Books	100
Equipment	150
Uniforms	30

Financial Assistance

The Physician's Assistant Program is approved for veterans educational benefits (G. I. Bill) for those who are eligible.

Limited funds are available for student support and are granted on the basis of need as determined by application to the Director. Applications for financial assistance will be considered only after registration. Students should not anticipate financial assistance by the program as a means of support.

Employment Opportunities

Part-time employment for students is available in many areas of the Medical Center. Employment that can net the student about one hundred dollars per month and yet not jeopardize his education is generally available. Students must comply with the academic schedule and are prohibited from working more than fifteen hours per week.

Employment for students' wives is available in or near the University. Typical salaries are three to five hundred dollars per month for secretaries, practical nurses, and other technically trained people; and four to seven hundred dollars per month for registered nurses, medical technologists, and other professionally trained people.

Admission

Admission Requirements

New students are admitted for the academic year of school beginning in the fall. Since the enrollment is limited, the Committee on Admissions selects students who, in its judgment, are best qualified to benefit from the educational advantages which the program offers. Selection is based on the academic record of the candidate, on test scores, and on satisfactory evidence of good character and general fitness. Because of the academic demands on the student during the two year training program, certain prerequisites have been established for qualification as a candidate for the program.

Prospective students are urged to broaden their reading and to make the acquaintance of a broad variety of books and magazines. At the same time they should take every opportunity to increase their competence in writing. Those who cannot write simple, clear, grammatical English prose will be progressively at a serious disadvantage in the competition for admission and also in the general work of the program. Careful attention to correct English in all correspondence and on application blanks cannot be too seriously stressed for candidates for admission.

Prerequisites

1. A high school diploma or its equivalent by examination. Preference is given to candidates with two or more years of successfully completed

general college course work. All applicants should have some science courses in their academic background.

2. Previous experience in the health field with at least one year involving extensive direct patient contact.

3. Three character references and personal evaluations. These should be completed on the forms provided by the Committee on Admissions. One form should be completed by a physician with whom the applicant has worked, one by a commanding officer or supervisor, and one by an unrelated acquaintance of five years or more.

4. Completion of the Scholastic Aptitude Test and the Math Achievement Test Level I of the College Entrance Examination Board. These tests are given on the first Saturday of March, May, November, and December; and on the second Saturday of January and July. Arrangements for taking these examinations can be made through the Educational Testing Service. Applicants from the west, southwest, and all foreign countries should address their correspondence to: College Entrance Examination Boards, P. O. Box 1025, Berkeley, California 94701. Applicants from the east, midwest, and south should address their correspondence to: College Entrance Examination Boards, P. O. Box 592, Princeton, New Jersey, 08540. Information can also be obtained through local high schools, military education offices, and local Educational Testing Service offices in many cities. When taking the examinations you have to fill in the college that is to receive the test results. Our code number is 5174. *Do not fail to take that number with you to the examination.*

Candidates should allow at least three weeks for the receipt of requested information and applications must be received by the testing center one month prior to the date of the exam. Applicants should therefore begin preparation for the examinations at least two months prior to the examination date. Because final student selection begins in April all applicants must take their examinations by March of the year they wish to begin.

It should be noted that the Scholastic Aptitude Test given in the mornings consists of both verbal and math sections. The math section of the Scholastic Aptitude Test should not be confused with the Math Achievement Test Level One which is given in the afternoon. This latter test is also required.

5. Application files must be complete by April 15 of the year for which admission is requested. To be considered complete they must contain the following:

a. A completed application form including a photograph.
b. Transcript records from high school, college, military schools, and all other academic training.

c. Three completed personal evaluation forms.
d. Appropriate College Entrance Examination Board test results.

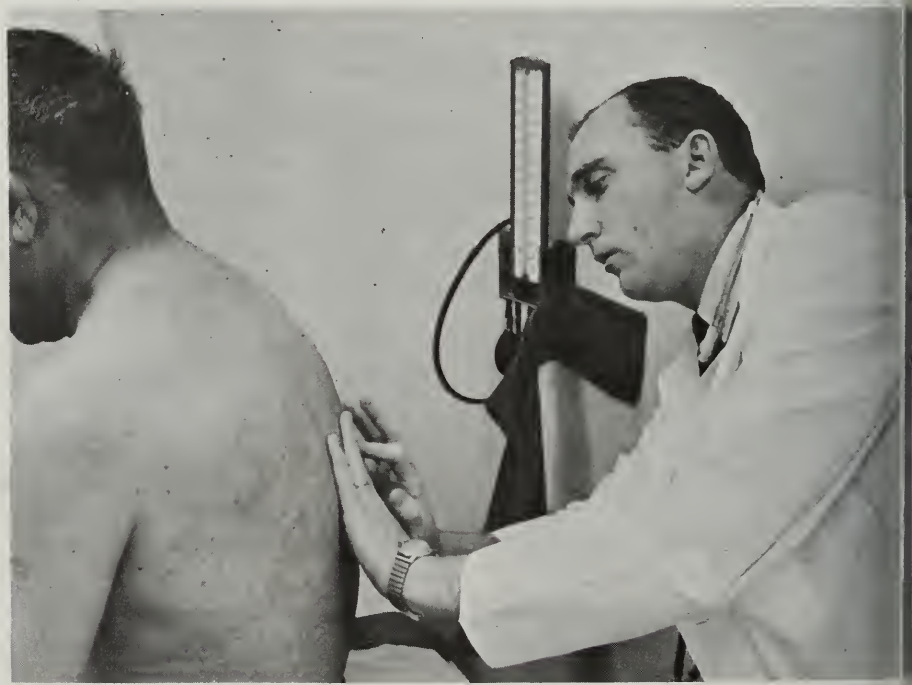
Application for Admission

Application forms may be obtained by writing to the Physician's Assistant Program, Committee on Admissions, P. O. Box CHS 2914, Duke University Medical Center, Durham, North Carolina 27706. Please do not send requests before July 1. Formal applications will be accepted by the committee between July 1 and April 1 of the following year.

Selection

Selection is made between April 1 and July 1 for the students entering the following September. The data on each candidate are carefully screened by the Committee on Admissions and a personal interview will be arranged at Duke University for those with satisfactory credentials. Final notification will be made by July 1 as to whether or not an applicant has been accepted for admission.

During his training the physician's assistant is taught how to do complete patient evaluations by collection of historical and physical data.



Registration and Regulations

Registration and Orientation

Students will be registered on the first day of classes. Registration begins promptly at 8:30 a.m. Students who report at a later time will be required to pay a $10.00 late registration fee. In no case will registration be considered after the end of the first week of classes. Orientation will immediately follow registration procedures and will last the remainder of the day. During orientation, each student is required to undergo a physical examination under the program's direction. Students whose condition needs further observation may be admitted tentatively, but must cancel their applications if findings prove them physically unable to pursue the program.

Identification Cards

On registration day each student is issued an identification card which is to be carried at all times. The card secures library privileges, health services, entry into certain athletic events, and admission to other functions entitled by special student status. A student is expected to present the card at the request of any authorized official of the University.

These cards are not transferable and their loss should be reported immediately to the Program Director's office. The cost of a new identification card is $5.00.

An over-all indication of the quality of student performance is provided by assigning quality points per semester hours of a course as follows:

Grade	Quality Points
A+	4.0
A	4.0
A—	3.7
B+	3.3
B	3.0
B—	2.7
C+	2.3
Grade	Quality Points
C	2.0
C—	1.7
D+	1.3
D	1.0
D—	1.0
F	0.0

The course grade is not based on examinations alone but also on the quality of the student's classroom work and written work throughout the didactic phases of the program.

A—Excellent. *A* indicates achievement of distinction. It involves excellence in several, if not all, of the following aspects of the work: completeness and accuracy of knowledge, intelligent use of knowledge, independence of work, and originality.

B—Good. *B* indicates general achievement superior to the acceptable standard defined as *C*. It involves excellence in some aspects of the work, as indicated in the definition of *A*.

C—Average. *C* indicates the acceptable standard for graduation from this program. It involves such quality and quantity of work as may fairly be expected of a student of normal ability who gives to the course a reasonable amount of time, effort, and attention. Such acceptable standards should include the following factors: familiarity with the content of the course, familiarity with the methods of study of the course, full participation in the work of the course, and the ability to write about the subject in intelligible English.

D—Lowest passing grade. *D* indicates work which falls below the acceptable standard defined as *C* but which is of sufficient quality and quantity to be counted in the hours of certification if balanced by superior work in other courses.

F—Failure. *F* indicates failure that may not be made up except by

repeating the course. All failures in the preclinical section must be made up before the student is eligible to participate in the clinical section.

Students with failing grades in any of the preclinical courses will be ineligible to continue in the clinical portion until the failures have been made up.

Students must have a quality point ratio of at least 2.0 before starting the clinical portion of the Physician's Assistant Program.

Grading

Final grades of performance in academic work are sent to students at the end of each phase of the preclinical portion and after each clinical rotation while enrolled in the program. Students will be notified of any unsatisfactory performance. Progress through each phase of the program is monitored by the faculty in charge. Further evaluations are based on written and oral examinations. The student is certified as a physician's assistant upon successful completion of all preclinical and clinical material along with passing scores on the written, oral, and practical board examinations at the end of the twenty-four month period.

Incomplete Work

If because of illness or other emergency a student's work in a course is incomplete, he may receive an *I* for the course instead of a final grade. Incomplete courses must be completed before the close of the succeeding phase; otherwise, the *I* is converted to an *F* and the course must be retaken before the student can receive credit for it. In case a student whose work is incomplete is also absent from the final examination, an *X* is received for the course.

Class Attendance Regulations

The attendance regulations specifically place the responsibility for class attendance upon the individual student. A student is expected to attend his classes regularly and punctually. It should be recognized that one of the most vital aspects of a residential college experience is attendance in the classroom, and that the value of this academic experience cannot be fully measured by testing procedures alone. The members of the student body are considered sufficiently mature to appreciate the necessity of regular attendance, to self-discipline essential for such performances, and, conversely, to recognize and accept the consequences of failure to attend. Instructors are privileged to refer to the Program Director for appropriate action for any student who in their opinion is causing his work or that of the class to suffer because of absences or latenesses.

Absences from classes due to illness will be excused when certified by a proper medical official. Absences from classes due to authorized repre-

sentation of the University may be excused. Officials in charge of groups representing the University are required to submit names of those persons to be excused to the program director's office forty-eight hours in advance of the hour when their absences are to commence.

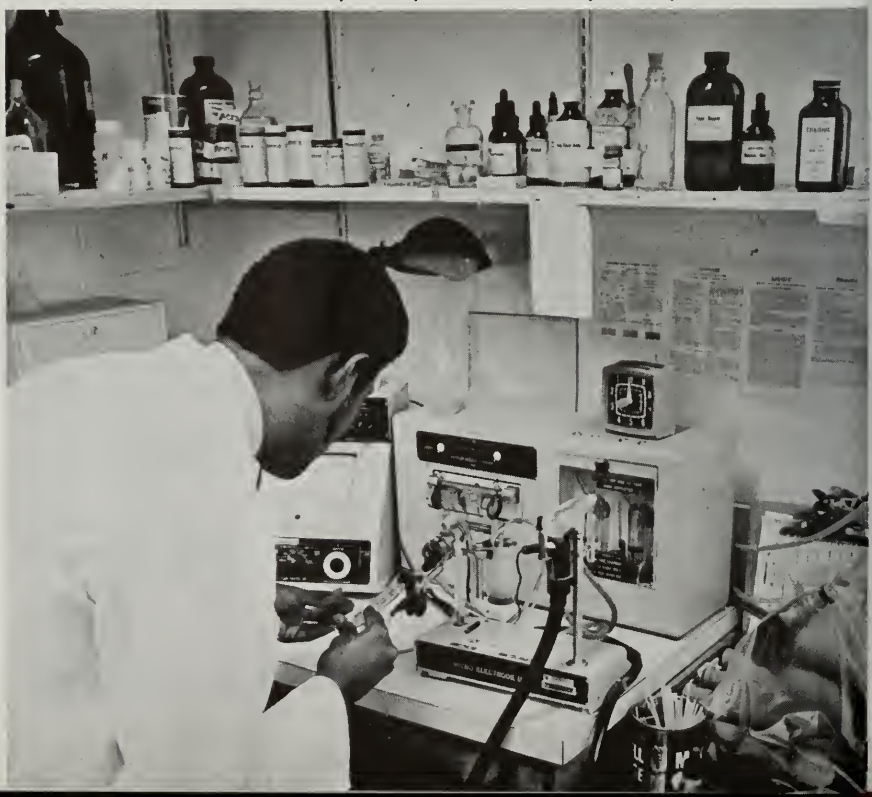
Nonacademic Regulations

Accepting admission to the Physician's Assistant Program obligates the student to all Duke University regulations. The regulations, rights, and responsibilities of the student are incorporated in a student handbook issued to the students at the time of registration.

Certification

Student's progress through the course is carefully monitored by the faculty. Grades, based on class participation and oral and written examinations, are continually posted and updated during the preclinical curriculum. During the clinical experience the students are evaluated by the faculty and staff in charge at the completion of their rotations. The final week of the twenty-four month program is set aside to allow the student the opportunity of demonstrating his abilities in oral, written, and practical evaluations. Upon satisfactory completion of the requirements, the student is then certified by Duke University as a physician's assistant.

A graduate physician's assistant participates extensively in the evaluation of newborns as well as participation in therapeutic procedures.



Opportunities for the Graduate

Skills and Functions

The training in the development of specific skills which the Physician's Assistant Program offers its students is directed toward making them stable and productive members of the health team and thereby provide opportunities for a career and for future growth in many health-related areas.

Graduates of the program can be employed by a physician, or by a group of physicians. Within the Duke University Medical Center, graduates are needed in research laboratories, clinical areas, diagnostic laboratories and special areas such as the renal center and the hyperbaric chamber. Outside the Medical Center there are infinite opportunities for employment by community based physicians and clinics. In any case the physician's assistants clinical endeavors will always be under the supervision of a physician.

Employment Opportunities

The need for the physician's assistant can be measured and evaluated in many ways, but perhaps one of the most significant ways is in viewing the employment opportunities. The available positions outnumber the

graduates by over five-to-one. Almost daily, requests for physician's assistants from all over the country are received; however, as with requests for physicians, many of these must go unfilled. Even though the primary objective of the program is to fulfill the needs of the first line community physician, it is easy to realize how every segment of medical practice can function more efficiently by utilizing these intermediate level professional assistants.

Salary Range

At the time of the program's inception, the question of salary range was raised. It was felt that a professional person of this caliber would command an economically attractive income which in itself would be capable of encouraging career stability. However, two related items were quickly realized—if the income of the physician's assistant was too far out of line with that of the nurse, hard feelings could possibly arise, and in order to command a respectable income, the physician's assistant would have to prove his worth. The fact that the physician's assistant would be on a schedule closely resembling that of a physician was also taken into account. On the basis of these and other factors it was felt that a justifiable starting salary would be in the range of eight to ten thousand dollars a year. Currently, the graduates employed in the Duke Medical Center receive a starting salary in the range of eight thousand dollars a year and the average starting salary offered by physicians outside the Medical Center is in the range of ten thousand dollars a year. The ultimate income of a physician's assistant will undoubtedly be based on his actual value to his employer-physician.

Utilization and Role

One of the most frequent questions raised about the utilization of the graduate is whether he should be employed by one or more than one physician, by an institution, or both. In the judgement of the administration, every physician's assistant shoud be employed by and be responsible to *a* physician. Such an assistant can be used by more than one physician, but one physician's assistant per two physicians is felt to be the maximum ratio by all who have been instrumental in the training program to date. The reasons for this are many but are based primarily on two factors—the need for identification of the physician's assistant with a physician, and the realization of the responsibility required on the part of the physician toward the physician's assistant. To be sure, many needs could be fulfilled by using this type of assistant exclusively in a hospital setting, but such a utilization must include a bond of responsibility between the physician's assistant and his employer-physician.

Courses of Instruction

Preclinical Courses

PA 101. ***History, Philosophy, and Ethics of Medicine.*** An introductory course in the history of medicine for providing the student with a broad background and understanding of the development of modern day medicine. 1 semester hour. *Howard*

PA 103. ***Basic Clinical Laboratory.*** An introductory course to allow the students to develop proficiency in basic laboratory procedures including complete blood counts, urinalyses, Gram Stains and their clinical applications. 2 semester hours. *McQueary*

PA 105. ***Medical Terminology.*** A study of Greek and Latin etymology limited to common medical terminology so that students can develop an in-depth professional vocabulary. 1 semester hour. *Kernodle*

PA 107. ***Inorganic Chemistry.*** A rapid and concentrated review of the fundamentals of general inorganic chemistry. 1 semester hour. *Spooner*

PA 109. ***Introduction to Animal Experimentation.*** A lecture course covering applicable veterinary epidemiology and the understanding of basic techniques in the selection and handling of experimental animals. 1 semester hour. *Vakilzadeh*

PA 131. ***Bacteriology.*** An introduction into the clinical applications of bacteriology including specimen collection, handling, and identification. 1 semester hour. *Osterhout*

PA 133. ***Anatomy and Physiology.*** A coordinated, systemic approach to the understanding of normal human structure and function. 4 semester hours. *Staff*

PA 135. ***Essentials of Chemical Biology.*** A study of organic chemistry and the clinical relationship of biophysiology and physiologic chemistry. 3 semester hours. *Spooner*

PA 137. ***Clinical Medicine.*** A coordinated systemic encounter with the concept of disease processes by a study of the common clinical disease manifestations. 6 semester hours. *K. Andreoli and Staff*

PA 139. ***Pharmacology.*** A study of drug therapy related to common diseases with an emphasis on the physiologic actions of drugs in the body. 2 semester hours. *Staff*

PA 141. ***Physical Evaluation.*** A coordinated clinical seminar course for learning techniques in physical examination. 1 semester hour. *Staff*

PA 143. ***Clinical Chemistry.*** An eight week laboratory course to provide the student with the capability of accurately performing clinical laboratory studies. 2 semester hours. *Staff*

PA 145. ***Diagnostic Procedures.*** An eight week laboratory-clinical course to provide the student with an understanding of the techniques of performing technical procedures used in patient evaluation. 2 semester hours. *McQueary and Staff*

PA 147. ***Animal Surgery.*** An eight week laboratory course to allow the students the opportunity of learning minor and major surgical procedures, the care of wounds, and emergency surgical procedures. 2 semester hours. *LeMay and Staff*

PA 181. ***Electrocardiography.*** An introduction into the techniques used in obtaining electrocardiograms and their clinical indications, interpretation, and manifestations. 1 semester hour. *K. Andreoli*

PA 183. ***Introductory Radiology.*** An introduction into the clinical indications and interpretations of chest and bone roentgenograms. 1 semester hour. *T. Thompson*

PA 185. ***Community Health.*** A broad overview of medicine and its application at the community level. 1 semester hour. *Staff*

PA 187. ***Basic Principles of Data Processing.*** An introduction into the functions of computers and their application in modern day medicine. 1 semester hour. *C. Smith*

PA 189. ***Patient Evaluation.*** An in-depth exposure into the methods of acquiring and recording a complete patient history and physical examination. 2 semester hours. *McFarland*

PA 191. ***Medical Instrumentation.*** A lecture and demonstration course intended to provide the student with an understanding of the functions of modern electrical medical and surgical diagnostic and therapeutic equipment. 1 semester hour. *Sims*

Required Clinical Rotations

Students participating in medicine or surgery must take *one* inpatient and *one* outpatient rotation plus all other rotations listed in this group.

PA 201. ***Medical Inpatient Service.*** An eight week clinical exposure to the evaluation and care of inpatients on the medical service. The student participates in all phases of work and attends appropriate conferences. 6 semester hours. *Chief Medical Resident*

PA 231. ***Surgical Inpatient Service.*** An eight week clinical exposure to the evaluation and care of inpatients on the surgical service. The student participates in all phases of work and attends appropriate conferences. 6 semester hours. *Surgical Resident*

PA 203. ***Medical Outpatient Clinic and Emergency Room.*** An eight week clinical participation in the evaluation and treatment of patients in the medical outpatient clinic and emergency room. 6 semester hours. *Bogdonoff*

PA 233. ***Surgical Outpatient Clinic and Emergency Room.*** An eight week clinical participation in the evaluation and treatment of patients in the surgical outpatient clinic and emergency room. 6 semester hours. *Peete*

PA 205. ***Pulmonary Function and Inhalation Therapy.*** A four week clinical rotation to provide the student with the ability to perform pulmonary function studies including blood gases; and to properly operate inhalation therapeutic equipment. 3 semester hours. *Ramirez-Rivera*

PA 207. ***Health Administration.*** A four week program with participation by the North Carolina state health agencies, insurance companies and voluntary health agencies associated with student field participation for providing the student with a working knowledge of operational health services. 3 semester hours. *Howard*

PA 209. ***Faculty Health Clinic.*** A four week participation in the operation of a private patient health clinic operated by the Department of Community Health Sciences. 3 semester hours. *McFarland*

PA 211. ***Library Research.*** A two week concentrated program to provide the student with the opportunity of doing library research for the development of two research papers which will be used for seminar presentations to the students in the preclinical program. 1 semester hour. *Staff*

PA 213. ***Outside Physician.*** An eight week application of services in conjunction with a community based physican. The student will have the

opportunity to participate in clinical practice at the community level. 3 semester hours. *Clinical Staff*

Elective Clinical Rotations

Students can choose any three elective rotations. During the preclinical year detailed accounts of the content of each rotation are made available to the students. After counseling with the students, schedules for the clinical experience are developed.

Department of Medicine

PA 311. ***Allergy and Respiratory Disease.*** 6 semester hours. *Sieker*
PA 312. ***Cardiology.*** 6 semester hours. *Ruskin*
PA 313. ***Cardiovascular Laboratory.*** 6 semester hours. *McIntosh*
PA 314. ***Endocrinology.*** 6 semester hours. *Lebovitz*
PA 315. ***Gastroenterology.*** 6 semester hours. *Tyor*
PA 316. ***Hematology.*** 6 semester hours. *Silberman*
PA 317. ***Hyperbaric Medicine.*** 6 semester hours. *Saltzman*
PA 318. ***Lincoln Hospital.*** 6 semester hours. *Johnson*
PA 319. ***Nephrology.*** 6 semester hours. *Robinson*
PA 320. ***Neurology.*** 6 semester hours. *Heyman*
PA 321. ***Psychosomatic Medicine.*** 6 semester hours. *Reckless*
PA 322. ***Rheumatology.*** 6 semester hours. *Kerby*
PA 323. ***Dermatology.*** 6 semester hours. *Tindall*

Department of Surgery

PA 411. ***Blood Bank.*** 6 semester hours. *W. Smith*
PA 412. ***General Surgery.*** 6 semester hours. *Mauney*
PA 413. ***Neurosurgery.*** 6 semester hours. *Odom*
PA 414. ***Ophthalmology.*** 6 semester hours. *Anderson*
PA 415. ***Orthopedic Surgery.*** 6 semester hours. *Goldner*
PA 416. ***Otolaryngology.*** 6 semester hours. *Hudson*
PA 417. ***Urology.*** 6 semester hours. *Glenn*
PA 418. ***Plastic Surgery.*** 6 semester hours. *Pickerell*

Department of Pediatrics

PA 511. ***General Pediatrics.*** 6 semester hours. *Katz*
PA 512. ***Newborn Nursery.*** 6 semester hours. *Brumley*
PA 513. ***Clinical Research Unit.*** 6 semester hours. *Sidbury*

1969

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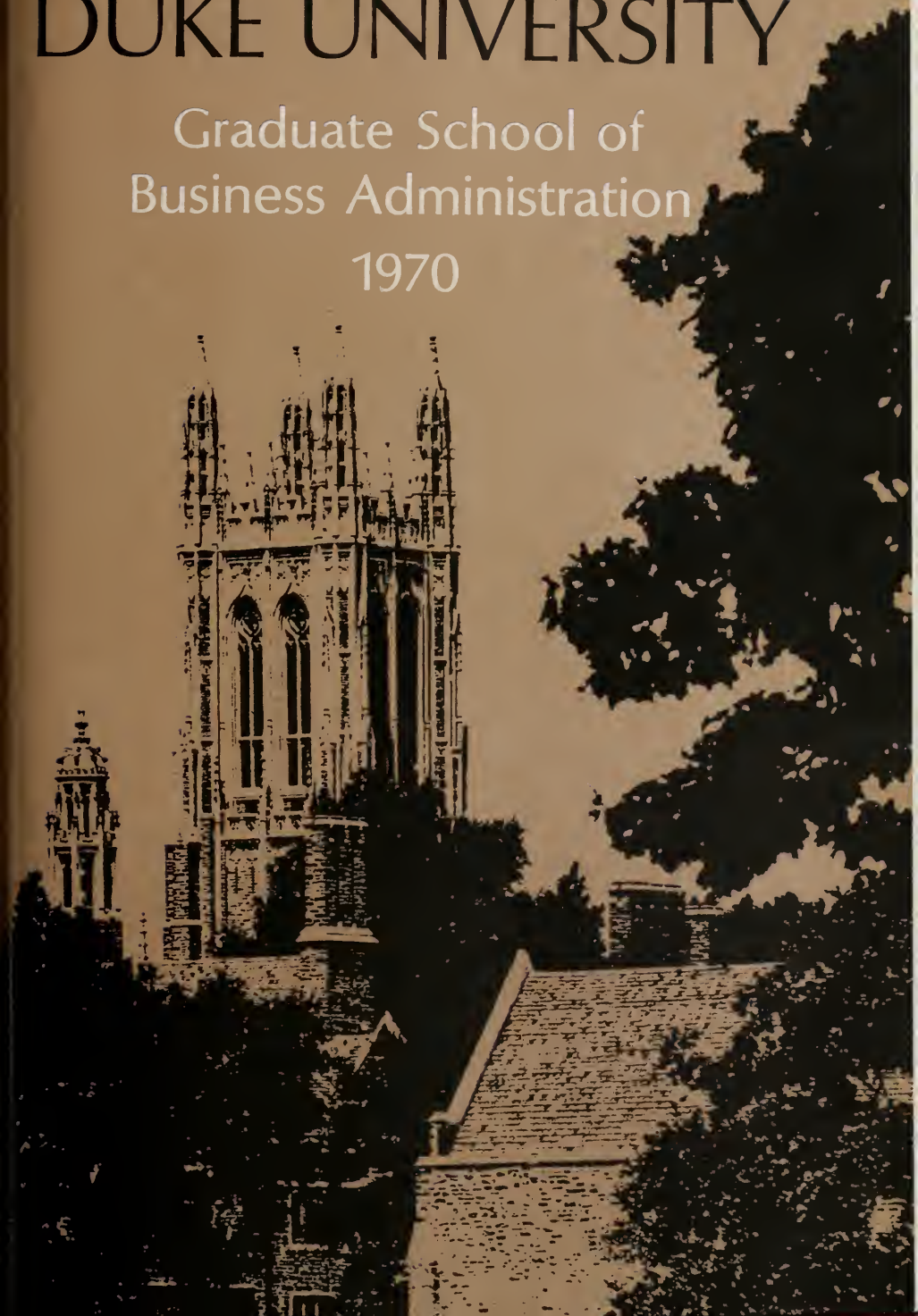
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BULLETIN OF DUKE UNIVERSITY

Graduate School of Business Administration

1970



Annual Bulletins

For *Bulletin of Information for Prospective Students*, apply to Office of Undergraduate Admissions, Duke University, Durham, N. C. 27706

For *Bulletin of Undergraduate Instruction*, apply to the Registrar, Duke University, Durham, N. C. 27706

For *Bulletin of the Graduate School*, apply to the Dean of the Graduate School, Duke University, Durham, N. C. 27706

For *Bulletin of the Summer Session*, apply to the Director of the Summer Session, Duke University, Durham, N. C. 27706

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For *Bulletin of the School of Nursing*, apply to the Dean of the School of Nursing, Duke University, Durham, N. C. 27706

For *Directory of the Officers, Faculty and Staff*, apply to Office of the Secretary, 215 Allen Building, Duke University, Durham, N. C. 27706

For *Bulletin of Faculty Publications*, apply to Office of the Vice Provost, 207 Allen Building, Duke University, Durham, N. C. 27706

Cover design is a line conversion photograph of the Chapel.

BULLETIN OF DUKE UNIVERSITY

Graduate School of Business Administration

1970-1972

Durham, North Carolina 1969

Volume 41 June 1969 Number 8–E

The **Bulletin of Duke University** is published monthly except in July, August, September, and December by Duke University, Duke Station, Durham, N. C. 27706. Second-class postage paid at Durham, N. C.

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Calendar of the Graduate School of Business Administration

1970

September

8 Registration and first day of class

November

26 Thanksgiving Day

December

15 Last day of classes
16–18 Examination period
19 Christmas vacation begins

1971

January

4 Second semester begins

February

27 Spring vacation begins

March

8 Classes resume—First year students
8–14 Practicum research—Second year students only
15 Classes resume—Second year students

April

16 Classes end—First year students
19–21 Examination period—First year students
23 Classes end—Second year students
26–28 *Examination period—Second year students

June

7 Graduation

*Second year students may use the period between examinations and graduation to complete research on the practicum.

1971

September

7 Registration and first day of class

November

25 Thanksgiving Day

December

14 Last day of classes
15–17 Examination period
18 Christmas vacation begins

1972

January

10 Second semester begins

March

4 Spring vacation begins
13 Classes resume—First year students
13–19 Practicum research—Second year students only
20 Classes resume—Second year students

April

21 Classes end—First year students
24–26 Examination period—First year students
28 Classes end—Second year students

May

1– 3 *Examination period—Second year students

June

5 Graduation

*Second year students may use the period between examinations and graduation to complete research on the practicum.

Officers of the University Administration

Douglas Maitland Knight, Ph.D., Litt.D., LL.D., L.H.D., *President of the University*
*R. Taylor Cole, Ph.D., *Provost*
Frank Leon Ashmore, A.B., *Vice President for Institutional Advancement*
Gerhard Chester Henricksen, M.A., C.P.A., *Vice President and Treasurer*
Everett Harold Hopkins, M.A., LL.D., *Vice President for Regional Programs, Assistant Provost*
Charles B. Huestis, *Vice President for Business and Finance*
†Barnes Woodhall, M.D., *Associate Provost*
Frank Traver de Vyver, Ph.D., *Vice Provost*
Harold W. Lewis, Ph.D., *Vice Provost and Dean of Arts and Sciences*
Richard Lionel Predmore, D.M.L., *Vice Provost*
Craufurd David Goodwin, Ph.D., *Vice Provost*
William J. Griffith, A.B., *Assistant to the Provost in the Area of Student Affairs*
Benjamin Edward Powell, Ph.D., *Librarian*
Richard Lovejoy Tuthill, Ed.D., *University Registrar*
Rufus H. Powell, LL.B., *Secretary of the University*
Stephen Cannada Harward, A.B., C.P.A., *Assistant Secretary and Controller*
Edwin Constant Bryson, LL.B., *University Counsel*

*Through 1-15-69; Marcus E. Hobbs, Ph.D., elected Provost.
†Through 1-15-69; William G. Anlyan, M.D., elected Associate Provost. Dr. Barnes Woodhall appointed Chancellor Pro-tem.

General Information

The University

The story of Duke University began nearly a century and a quarter ago with the founding of the Union Institute in Randolph County. "Dedicated to the erasing of ignorance and error and to the education of responsible citizens," the Institute grew slowly for two decades. In 1859 it was formally organized as Trinity College, which laid the solid foundations for the future. When the college moved to the growing city of Durham in 1892, it found increased support from the church and from individuals who were dedicated to the aims of liberal education. During the next three decades, Trinity College drew to its faculty men of imagination, courage, and intellectual achievement who, in an atmosphere of academic freedom, created a notable liberal arts college.

The transition from college to university dates from James B. Duke's Indenture of Trust in 1924, through which Duke University came into being. Trinity College was joined by three other undergraduate colleges, The Woman's College in 1925, The School of Engineering in 1939, and The School of Nursing in 1953. Through the years, graduate and professional schools in Arts and Sciences, Divinity, Forestry, Law, Business Administration, and Medicine were established. In hardly more than a generation, Duke University has attained a position of educational leadership and importance, both regionally and nationally, and has nearly 43,000 active alumni from all fifty states and many foreign countries.

Setting

Duke University is in Durham, North Carolina, which is centrally located in the state, roughly midway between the majestic scenery of the Blue Ridge and Great Smoky Mountains and the historic Atlantic Coast. A city of nearly 100,000, it is one of the growing communities of the Research Triangle of the Piedmont section of North Carolina. Drawing on the resources of several major universities in Durham, Raleigh, and Chapel Hill, expansion in industry, research, and education is encouraged and facilitated by the personnel of the Research Triangle Foundation.

The Graduate School of Business Administration

The Graduate School of Business Administration after several years in the planning stage was officially created in March, 1969, by action of the Board of Trustees of Duke University. The School in conjunction with the Graduate School of Duke University is authorized to award the Master of Business Administration degree beginning in September, 1970, and the Doctor of Philosophy degree beginning in September, 1972.

The School shares the Social Science Building with the Department of Economics. This building is conveniently located near the center of the campus within easy walking distance of the University Union and the William L. Perkins Library.

The long range plans for the School state that it will be of modest size, in keeping with the tradition of the University. The entering M.B.A. class is not expected to exceed 100 students during the 1970's. The maximum number of entering Ph.D. candidates is not expected to exceed 25 in any one year. The faculty is expected to grow to approximately 25 by 1975.

The Master of Business Administration Program

The general goal of the graduate programs in business administration is to provide a rigorous and thorough education for students who aspire to improve the economic organization and operation of our society.

The Master of Business Administration Program will prepare men and women to understand the basic structure of competitive and cooperative processes, both within and between organizations, and to use the intellectual-professional tools of management. The program serves the student by increasing his capacity for independent thought, creative design of action, constructive compromise, and responsible leadership.

The objectives for the program are:

1. To develop the student who is capable of rigorous analysis of economic and administrative problems and who can develop optimal solutions which serve to coordinate the over-all activity of the organization. This involves a thorough preparation in modern tools of analysis and a rich background in the theoretical foundations of business administration.

2. To develop the student who not only perceives the parts of the organization as subsystems, but also regards the individual organization as a subsystem of a larger economic and social complex.

3. To assist the student to become aware that his graduate studies are but one major phase in the life-long education of a professional administrator. Preparation in the basic disciplines and their application in the solution of specific problems is emphasized so that graduates are

equipped to learn and use the most imaginative and rigorous new works as they are developed.

4. To prepare the graduate to contribute to the solution of a variety of managerial problems after only a short time with an organization. The student will learn to adapt and apply the fundamental theories of basic disciplines to the solution of specific problems. Training for a specific position in any given industry, in the opinion of the faculty, is of less importance than education for a broader range of positions which will provide the student with maximum flexibility in his career choices.

Educational Philosophy

The M.B.A. program is oriented toward the application of basic disciplines and applied in the solution of business problems. This approach implies that the administrator should be able to simplify a complex situation into a form that is amenable to solution. Therefore, students need to become expert at successive relaxation of assumptions and need to have an appreciation for selection of simplifying assumptions to which the final decision is relatively insensitive. The pedagogy of the program conforms to this pattern.

Another characteristic of the M.B.A. program is that problems from traditional disciplines are treated simultaneously. Business schools have continually emphasized the "integration" of the various traditional fields in business administration. The strategy selected here is to minimize the degree to which the traditional fields are disaggregated, or "disintegrated," into separate courses. For example, the fields of controllership, finance, international business operations, marketing, and production all require much common knowledge. Our intent is to educate the students in a manner that emphasizes the essential decision characteristic of the problem, with applications in the above fields as special cases of the central concepts. Thus, the Duke M.B.A. should be reasonably flexible in moving from one part of the firm to another. He should be able to learn quickly and to transfer lessons learned in one segment of the firm to other appropriate segments. He should be well prepared to depart from tradition when innovation is needed.

A third major characteristic of the pedagogical strategy is to teach the student something about the business world as it is—but to do so within the general context of concept oriented courses. The curriculum must, therefore, be planned in two major dimensions: (a) concepts and theoretical foundations, and (b) facts needed to provide decision practice and to inform the student about current conditions and practice in business. The greater part of the task of learning the facts of the world is left to the period of professional practice. We have chosen this method of teaching for two reasons: first, the University has an advantage in

teaching concepts and modern tools; and second, firms have an advantage in providing experiences from which description of current practice and conditions is obtained.

Course of Study

The educational approach of the M.B.A. curriculum is based on the theoretical foundations that underlie the science of management and its operational techniques. These foundations emphasize (*a*) experience in the conceptual formulation of both problems and solutions, (*b*) innovation in the design of strategy, organization and policy for business, and (*c*) preparation in the basic skills essential to continued professional development in the area of decision analysis. The faculty believes that the most practical preparation lies in conceptual and theoretical understanding of professional practice, both as it is and as it ought to be.

The M.B.A. curriculum includes in its core program knowledge common to each of the areas of professional interest offered by the School. This includes both the theoretical foundations and tools of analysis. Such an arrangement permits the student maximum flexibility in the development of his individual interests, both while he is engaged in academic preparation and after graduation. The final semester is devoted almost entirely to the development of a field of application elected by the student.

The M.B.A. requires four semesters of full-time work, totaling 64 units of graduate course credit.

The schedule of courses is listed on page 7. The first year is organized into four main courses, quantitatives methods, managerial economic theory of the firm, information systems, and organization theory, plus a one-semester course in macroeconomic analysis.

In the four months between the first and second years the M.B.A. student is expected to gain practical experience through employment. This experience, apart from its obvious benefits to the student, aids him in his selection of an area of study for his practicum, which is part of his fourth semester's work.

The purpose of the work in the third semester of the M.B.A. program is to provide advanced tools of analysis and a general framework of understanding within which those tools can be applied. The relationships among the parts of the firm and the relationships between the firm and the various sectors of its environment can be classified into those which are competitive and those which are cooperative. (Obviously, the relationships between any two organizations are likely to contain both competitive and cooperative aspects.) The primary thrust of the work in this semester is focused on more advanced analysis of how the

firm's internal relationships and actions are related to the firm's external relations and actions. Since the legal framework is closely related to these matters, an introduction to some aspects of the law is included. Prerequisites for this set of courses are the courses in the first-year M.B.A. program.

The final semester of the M.B.A. program is oriented toward the application of the foundations built during the first three semesters. Each student is required to elect two courses in the applied fields (each of which is designed to prepare students for immediate professional practice) and a practicum (Business Administration 390). This latter course is an advanced and individually arranged investigation into a topic of prime interest to the student and normally is expected to involve the development of a solution to a problem of some economic enterprise. The elective work is selected from the following fields: controllership, finance, marketing, production, operations research, manpower planning, accounting, econometrics, and other fields which may be arranged by the student in consultation with his academic adviser. A course in the public policy of the firm (Business Administration 350) is also required.

The second year student will have a two week period during the spring semester in which no classes are scheduled. This period is to be used for concentrated work on the practicum and for employment interviews.

Advanced Standing

The Duke M.B.A. program is very different from most undergraduate work in business administration. As a result, only on rare occasion is a student likely to be exempt from one or more core courses. In these instances, more advanced work is substituted.

Schedule of Courses

First Year

Fall Semester (Required)

300	Managerial Theory of the Firm	5 units
310	Foundations for Quantitative Analysis	5 units
320	Management of Information and Control Systems	2 units
330	Organization Theory and Management	4 units
		16 units

Spring Semester (Required)

301	Managerial Theory of the Firm	4 units
311	Foundations for Quantitative Analysis	4 units
321	Management of Information and Control Systems	4 units
331	Organization Theory and Management	2 units
341	Macroeconomic Analysis	2 units
		16 units

Second Year

Fall Semester (Required)

302	Cooperative Relations and Decisions	2 units
303	Competitive Relations and Strategies	3 units
304	Cooperative-Competitive Relations and Decisions	2 units
312	Operations Research	4 units
332	Organization Design	3 units
349	Law as a constraint for Business	2 units
		16 units

Spring Semester

350	Public Policy of the Firm	3 units
390	Practicum	5 units
	Elective	4 units
	Elective	4 units
		16 units

The Doctor of Philosophy Program

The Ph.D. Program, recently approved by the Graduate School, will be available to the graduates of the M.B.A. program and others beginning in the fall of 1972. The objective of the Duke Ph.D. Program is to prepare candidates for academic or business careers. Implicit in this objective is the requirement that the candidate should develop the capability to engage effectively in research related to the management of complex organizations.

General requirements for the Ph.D. degree at Duke University are described in the *Bulletin of The Graduate School.* Specific requirements of the Graduate School of Business Administration are:

1. Completion of the M.B.A. program offered at Duke University by the Graduate School of Business Administration, or its equivalent.
2. Completion of one year of study at Duke University (30 units in residence) beyond the level of the M.B.A. degree, and satisfactory performance on preliminary examinations in areas of: economic theory, quantitative methods, and the elected area of business administration.
3. Satisfactory completion of a doctoral dissertation.
4. Compliance with all requirements of the Graduate School.
5. The candidate for the Ph.D. in Business Administration is required to present evidence of preparation in a research tool area pertinent to his own professional program and plans. The satisfactory completion of the foreign language requirement as established by the Graduate School is

accepted as meeting this requirement. Advanced study in some discipline (e.g., mathematics) which can be shown to be of particular relevance to the individual's program may be used to meet this requirement after approval of the faculty of the Graduate School of Business Administration and of the dean of the Graduate School.

Course of Study

The course requirements for the year of study beyond the M.B.A. degree will be:

1. One semester of advanced microeconomic theory and one semester of advanced macroeconomic theory.

2. One year of advanced mathematics and/or statistics (i.e., two courses) to be selected from offerings of the Department of Mathematics. In cases of interest in areas not offered by the Mathematics Department, a tutorial may be designed to provide the needed educational experience.

3. A minimum of one course in Philosophy of Science for Social Sciences.

4. A minimum of three courses to be offered on a tutorial basis to fit the student's interests in the area of administration. These courses are to be designed by faculty members in the areas involved to meet both the objectives of the program and the more specific professional objectives of the student. Each of these tutorial courses will require extensive reading in the historical and current literature and a demanding research program. This group of courses, combined with those in 1-3 above, will provide the student with in-depth expertise in both subject matter and research procedures.

5. A minimum of two courses selected from any area in the University which are proper as part of the candidate's professional preparation. The candidate's adviser must approve the courses selected.

One illustrative program for the year of course work is as follows:

1. Economic Theory	6 units
2. Mathematics	6 units
3. Philosophy of Science	3 units
4. Tutorials in:	
Information Systems	6 units
Operations Research	3 units
5. Electives in:	
Finance	3 units
Computer Science	3 units
	30 units

We expect that most students will be prepared to take preliminary examinations in Economic Theory, Quantitative Methods, and an elected area of Business Administration at the end of the year of course work. The second year following completion of the M.B.A. program will be devoted to work on the doctoral dissertation on an approved topic related to the identification, extension, or unification of scientific knowledge pertinent to management of economic enterprises.

Resources for Study

Library

The new section of the William R. Perkins Library has shelf space for 1,500,000 books, seats for 1,250 students, and a staff of 200. When renovation of the old building is completed in the fall of 1969, the entire complex will provide room for 2,500,000 books and 2,100 students. The student stations include about 700 carrels, 200 closed and 500 open, of which 475 are in the new building.

Four of the six floors of the building are above ground. On the main floor—at ground level—are the reference and loan departments, bibliography, current periodicals, interlibrary loan, and all units of technical processing. Documents, newspapers, microtext collection, and the microphotography laboratory and other copying facilities are located on the floor below. The administrative offices and graduate reading room are on the second floor, and manuscripts and archives are on the third. Twelve small reading and study rooms are provided in the stacks for the departments in the humanities and social sciences that grant the doctorate. Four seminar rooms are also provided in the stacks.

Microphotography and Photographic Services utilize modern equipment for reproducing printed and manuscript materials and for reading microfilm materials.

The combined University Libraries contained 1,940,000 volumes in the summer of 1968. In addition to the collection in the Perkins Library, there are eight School and departmental libraries. Approximately 10,000 periodicals and 165 newspapers are received currently. The Graduate School of Business Administration has a designated reading room in the Library containing approximately 6,000 volumes selected to provide especially convenient access to graduate business students.

Computation Center

The Duke University Computation Center is intended to provide the University faculty and students with a facility for research and instructional computing needs.

The Center is presently equipped with an IBM System 360 Model 30 (24K bytes, two tapes, card reader, printer, Calcomp plotter) which is connected by high-speed telephone lines to an IBM System 360 Model 75 (512K bytes, 2,000K bytes LCS, two 2314 disk facilities, data cell, seven tapes, card reader, printer) located at the Triangle Universities Computation Center which is in the Research Triangle Park. In addition, there exists a medium speed terminal (IBM 2780 card-reader and printer), two IBM 1050 slow speed terminals, one of which is located in the building housing the Graduate School of Business Administration, and one IBM 2741 Keyboard terminal connected to the Triangle Universities Computation Center.

Student Life

Living Accommodations*

Housing

Duke University provides living accommodations for graduate-level resident students, both married and unmarried.

Rooms in residence halls, spaces in Town House Apartments, or other rental units may be reserved by single applicants only if they have been accepted by the Graduate School of Business Administration and after the required $25 room or security deposit has been paid to the Duke University Bursar.

Assignment priority is established by the date of receipt of completed applications with deposits in the Office of the Director of Housing Management.

Residence Hall space available for single graduate and professional students totals 197 beds for men and 87 beds for women. Facilities for single graduate and professional students are located on the northern side of the campus, a short walk from the Graduate School of Business Administration.

Town House Apartments, located between East and West campuses, include 30 two bedroom units, each furnished for three graduate women

*Information pertaining to residence halls and apartments is subject to change prior to September, 1969.

students. Two students occupy the master bedroom, the third occupies a smaller bedroom. A living room, kitchen, and one and a half baths complete these attractive living units.

For Married graduate and professional students, Duke University has 98 one bedroom luxury apartments under lease for a period of three years. All units are within walking distance of the campus.

Regulations governing room and security deposits and occupancy of rooms and apartments will be provided by the Office of Housing Management at the time application forms are forwarded to accepted students. Occupants within each type of housing are expected to comply with the appropriate regulations.

Application forms and detailed information on graduate housing will be mailed when the Graduate School of Business Administration has notified the Office of Housing Management of official acceptance of the student. Single women may express a choice for the type of housing desired. Requests for information and completed applications for rooms and apartments are to be returned, with required deposits, to the Office of Housing Management, Duke Station, Duke University, Durham, N.C. 27706.

Food Services

Food service on both the Woman's College Campus and the West Campus is cafeteria style. The dining facilities on the West Campus include one straight-line cafeteria with multiple-choice menus, a free-flow service area which includes cafeteria counters as well as a grill, and a table service dining room called The Oak Room where full meals and *a la carte* items are served. The Graduate Center has a cafeteria open at meal hours, and a coffee lounge which is open until 11:00 p.m. Because of the large number of those served in the dining halls, it is not possible to arrange special diets for individual students.

Services Available

Medical Care

The complete medical facilities of the Duke University Medical Center are available to all members of the University community. To secure the benefits of the Student Health Program, a graduate student during the term or semester in which the illness occurs must (1) in the Summer Session term be registered for at least 1 unit of research or 3 units of course work, (2) prior to completing minimum residence requirements be registered for at least 9 units per semester and thereafter according to the fee schedule in the *Bulletin of the Graduate School.* Students are not

covered during vacations and their dependents and members of their family are not covered at any time. Care is provided for men at the Student Health Office in Duke Hospital and for women at the Woman's College Infirmary and in the Student Health Office.

The service provided includes hospitalization in Duke Hospital, when recommended by the Hospital staff, to a limit of thirty days in the fall and spring semesters—six days in the Summer Session; medical and surgical care under the supervision of a senior physician or surgeon; drugs, X-ray work, and ward nursing. Students pay for board while in the hospital. Excluded from the service are refraction of eyes, treatment of teeth, and of all chronic and pre-existing conditions, and elective surgery.

Off-campus injuries and accidents are not covered by Student Health. Graduate students are urged to carry adequate health insurance to supplement Student Health Program services. If students have insurance providing hospitalization, surgical, or medical benefits, the benefit shall be applied to the cost of their medical care.

Students whose course load entitles them to full coverage under the Student Health program are eligible for a complementary insurance policy which then comprises protection for the entire calendar year. Concerning this complementary policy inquire of the dean of the Graduate School. *Foreign students are required to hold this or another acceptable policy.*

The Duke University Counseling Center

Through the Counseling Center, the University provides a professional counseling service designed to aid students in gaining a better understanding of themselves and the opportunities available to them. Counseling is available in the areas of career planning, educational opportunities, and personal and social adjustment.

The Center maintains files of educational and vocational information related to career planning, graduate educational programs and fellowships, and study aids.

National and University-wide testing programs are administered by the Center. A continuing program of research in the areas of counseling and testing is also carried on by the staff of the Center.

Appointments Office (Placement)

Duke University provides outstanding placement services for students and alumni. On-campus interviews are arranged with a broad spectrum of American industry for those persons who register with the Placement Office. It is expected that all students enrolled in the second year of the M.B.A. program will make their off-campus interview trips during the Spring holiday which will normally occur during the last week of February or the first week in March.

Student Activities

Graduate students new to Duke University may be reminded that they are welcomed to use such recreation facilities as swimming pools, tennis courts, golf course, and to affiliate with choral, drama, and religious groups. They may become junior members of the American Association of University Professors and may affiliate with Phi Beta Kappa and social fraternities. Wives of graduate students may join the very active Graduate Wives Club.

A full program of co-curricular and recreational activities is presented by the University Religious Council, Y.M.C.A., Y.W.C.A., Student Union, Student Government Organizations, and Clubs. Most programs are open to the entire University community. Inquiries should be directed to the Student Activities Office—202 Flowers Building.

The Information Center, Page Box Office, Coffee House, Publications, Art Gallery, Meeting Rooms, Lounges, Music Listening Rooms, and recreational facilities are located in the Flowers and Union Buildings.

Motor Vehicles

Each student possessing or maintaining a motor vehicle at Duke University shall register it annually at the beginning of the fall semester. If a student acquires a motor vehicle and maintains it at Duke University after academic registration, he must register it within five (5) calendar days after operation on the campuses begins. Resident students are required to pay an annual parking fee of $30.00 for each automobile and $10.00 for each two-wheeled motor vehicle. If a vehicle is removed from the campus premanently prior to February 15 and its decale returned to the place of registration by that date, there will be a partial refund on the registration fee.

At the time of registration of a motor vehicle, the following documents must be presented: (a) state vehicle registration certificate; (b) valid driver's license; (c) satisfactory evidence of automobile liability insurance coverage with limits of at least $10,000 per person and $20,000 per accident for personal injuries, and $5,000 for property damage, as required by the North Carolina Motor Vehicle Law.

Conduct of Students

Duke University expects and will require of all its students continuing loyal cooperation in developing and maintaining high standards of scholarship and conduct.

The University wishes to emphasize its policy that all students are subject to the rules and regulations of the University as currently in effect or, from time to time, are put into effect by the appropriate authorities of the University.

Any student, in accepting admission, indicates his willingness to subscribe to and be governed by these rules and regulations and acknowledges the right of the University to take such disciplinary action, including suspension and/or expulsion, as may be deemed appropriate, for failure to abide by such rules and regulations or for conduct adjudged unsatisfactory or detrimental to the University.

Admission

Applicants for admission to the Duke M.B.A. program should have earned a baccalaureate degree with a sufficiently good record of performance to demonstrate ability to engage in rigorous analysis. The only specific course requirement is one year of the calculus at the college level. Courses are offered jointly by the Department of Economics and the Graduate School of Business Administration late each summer for students whose preparation in mathematics is inadequate.

Admission to the M.B.A. program is granted to those students who, in the opinion of the Admissions Committee, can successfully complete the academic program and have the ability to assume a role of leadership in management. The evidence used by this committee includes:

1. Academic achievement.
2. Work experience or extracurricular activities.
3. Score on the Admission Test for Graduate Study in Business.
4. Personal recommendations.

No minimum standards of performance in any one area have been established, but convincing evidence of ability to complete the program is essential.

Students admitted to the M.B.A. program may matriculate at the beginning of the fall semester only. For those with a deficiency in mathematics, the deficiency must be corrected prior to the beginning of classes for the fall semester. The Graduate Record Examination is not an acceptable substitute for the Admission Test for Graduate Study in Business.

Application forms and information about financial aid may be obtained by writing to:

Director of Admissions
Graduate School of Business Administration
Duke University
Durham, North Carolina 27706

Admission credentials include:

1. A completed application form.
2. Two copies of all current transcripts from schools attended. (Tear forms included in the bulletin may be used to request transcripts.)
3. Before matriculation two copies of final transcripts from all schools attended must be included in the file.
4. Personal recommendations as required.
5. Score on the ATGSB examination.

Deadlines for Application

It is the applicant's responsibility to make certain that his application is completed and in order. The Graduate School of Business Administration follows progressive admission policy with the first group of students being notified of their acceptance by February 15. The application for financial aid will be sent to those requesting it upon completion of their application for admission. All applications for financial aid must be completed and in the hands of the Financial Aid Committee by February 15 for an award to be made the following fall.

Admission Test for Graduate Study in Business

The Admission Test for Graduate Study in Business, required of all applicants, is administered by the Educational Testing Service for a fee of $10. Detailed information about the Test and application forms may be obtained by writing directly to the Educational Testing Service, Box 966, Princeton, New Jersey 08540.

The examination is given at many centers throughout the United States and abroad. Arrangements to take the test at an established center must be made two weeks before the test date (six weeks at established foreign centers). The examination is given in early February, April, July, and November. Special Centers may be arranged for persons distant from established centers. Requests for such accommodation must be made at least two months prior to the selected test date.

Fellowship applicants must take the test in November or February. Other applicants may take it as late as April, but the earlier dates are recommended.

Additional Procedure for Foreign Students

Fully qualified students from outside the United States are welcomed in the Graduate School of Business Administration to take courses or to study toward a degree. In applying for admission the foreign student should, in addition to the information required of all students, submit with his application (1) if his native language is not English, certification of ability to use English through scores on tests provided by the Educational Testing Service (TOEFL), the University of Michigan Language Institute, or the American University Language Center, (2) a statement certified by a responsible person that his finances are sufficient to maintain him during his stay at Duke University, and (3) a statement by a qualified medical doctor describing any emotional or physical illness the applicant has had during the previous five years.

Notification of Status

When admission is approved, the student will receive a letter of admission and an acceptance form. *The process of admission is not complete until the statement of acceptance has been returned.*

Applicants who are admitted will be offered full admission or provisional admission. *Provisional admission* is offered (1) to students who, for a trial period of one semester or a minimum of 12 hours of course work, appear to warrant admission but do not fully comply with admission requirements, or (2) to students who are admissible except that the application lacks a letter of recommendation, a supplementary transcript, required test scores, or some other required information.

Financial Information

Living Accommodations

Housing

Rooms in residence halls are normally rented for the academic year, but for no period less than one semester or specified term. A limited number of single rooms are usually reserved for returning students.

Each student assigned to the Town House Apartments is currently charged $495.00 for the academic year on the basis of three individuals to an apartment. Utility charges are included in these rates. Rental rates for space in double residence halls rooms range from $325 to $355 for the academic year.

Current rates for apartment units for married students range from $126 per month (including utility allowances) for an unfurnished one bedroom unit to $175 per month (without utilities) for a partially furnished three bedroom unit.

No refund on residence hall room rent or the rent for spaces in Town House Apartments is made to students who withdraw after the date of registration, except for those who involuntarily withdraw to enter the armed services. Such refunds will be made in accordance with the University's established schedules.

Married Students who desire assignment to apartments will be offered

leases for specific periods. Cancellation procedures are stipulated in the agreements.

Food Services

Food service, on both the Woman's College Campus and the West Campus, is described under Living Accommodations. The cost of meals approximates $2.50 to $3.00 per day, depending upon the needs and tastes of the individual.

Tuition and Fees

The following table shows the tuition and fees collected from all students. All charges for each semester are due and payable, unless otherwise specified, at the time of registration for that semester and are subject to change without notice. No student is admitted to classes until arrangements have been made with the Bursar of the University for the settlement of his tuition and fees.

Tuition per semester ($60.00 per unit)	$950.00
Athletic fee, optional, per year, not including federal tax, payable in the fall semester	25.00
Binding fee, three copies of thesis or dissertation, other copies optional, $5.00 a copy	15.00
ETS Foreign Language Test, each administration, payable to the University Counseling Center	8.00
In absentia fee, due on date of registration, one unit per semester	60.00
Late registration fee	10.00
Microfilming fee, doctoral degree only, upon final submission of dissertation	25.00

Tuition for a full semester program amounts to $950.00. Part-time tuition is computed at the rate of $60.00 per unit. After the day of registration, no refund of tuition will be made except for involuntary withdrawal to enter the armed services.

Estimated Expenses in the Academic Year

The following table represents an estimate of a graduate student's basic expenses for one academic year for a full program of work. These figures do not include allowances for recreation, travel, clothing, and other miscellaneous items which vary according to the needs and tastes of the individual.

	Low	*Moderate*	*Liberal*
Tuition and fees*	$1900.00	$1900.00	$1900.00
Room Rent†	325.00	325.00	420.00
Board	550.00	600.00	650.00
Laundry	40.00	45.00	50.00
Books	70.00	90.00	110.00

*Tuition rates are guaranteed for the two years required to obtain the M.B.A. degree.

†In the Graduate Center. Low and Moderate schedules are for double occupancy, Liberal schedule is for single occupancy.

Financial Aid

Financial aid for M.B.A. students is in the form of scholarships and loans. In some instances a second-year M.B.A. student may be given a research assistantship. Students should not plan to earn money by part-time employment during the academic year because the demands of the educational activities are such as to make part-time employment almost impossible.

There is a period of four months between the first and second years during which the student is expected to engage in employment which supports and develops his academic work. During this period a portion of the earnings may be saved to assist in covering the expenses of the second year in the program.

Courses of Instruction

First Year M.B.A. Courses (Required)

The purpose of the work in the first year of the M.B.A. program is to provide the basic knowledge and skills required to understand and analyze the operations of a firm in a market economy. The topics are ordered in this first year to allow sequencing, which will serve to reinforce the knowledge gained in one course by follow-up in other courses. This sequencing also permits basic assumptions, developed in a tight theoretical structure in one area, to be relaxed and examined in subsequent work in others. Prerequisites for the first year's work are a baccalaureate degree and a one year sequence in the calculus.

B. Adm. 300-301. ***Managerial Theory of the Firm.*** This course deals with classical economic theory, and its further developments into more advanced, modern, and useful forms, as elements of the fundamental theory of the firm. Major emphasis is on the theory of competitive price and non-price market behavior in single and multiple market segments, inventory and production planning, capital investment decisions, introductory concepts of cooperation for exchange (i.e., vertical production and marketing relationships), and formulation of the basic economic strategy of the firm. (5 units Semester I and 4 units Semester II)

B. Adm. 310-311. ***Foundations for Quantitative Analysis.*** Mathematical and statistical background, beyond the level of differential and integral calculus required in the M.B.A. program, are studied in this course. The

major topics included in the first semester are: sets, relations, and functions; matrix algebra; classical optimization techniques; and linear programming. Second semester topics include: probability, statistical decision theory, sampling theory, estimation and hypothesis testing, and regression and correlation analysis. (5 units Semester I and 4 units Semester II)

B. Adm. 320-321. ***Management of Information and Control Systems.*** The problems of information system design, data collection, and analysis for purposes of planning, evaluating, controlling, and revising the plans of the firm form the core of this course. The accounting and more general information systems are closely related to the marketing, production, and financial decisions treated in B. Adm. 300-301. Motivation through proper use of the reporting and information system is explored in detail. (2 units Semester I and 4 units Semester II)

B. Adm. 330-331. ***Organization Theory and Management.*** The first semester of this course is concerned with the analysis of purposive behavior in complex organizations. Theories of individual decision making, human aspects of groups, and normative and descriptive systems are the major areas of concern. The second semester continues to work but emphasizes the firm as a social-political system. Strategy concepts, motives for collective activity, goal setting and policy formulation are the primary topics. The course ends with an overview of the executive function within the administrative system. The purpose of the course is to provide the future administrator with an understanding of human behavior in groups and formal organizations, particularly as that behavior deviates from and extends B. Adm. 300-301. In addition, the course considers the behavioral theories and findings necessary for treating the firm as an information processing, problem solving system in B. Adm. 320-321. (4 units Semester I and 2 units Semester II)

B. Adm. 341. ***Macroeconomic Analysis.*** The economic theory pertaining to the economy of the nation is developed in this course. The determinants of price level, rate of growth, and level of aggregate income, employment, and output are studied with emphasis on understanding the rationale of government policies and the impact of governmental behavior on these variables. (2 units Semester II)

Second Year Courses—Fall Semester (Required)

The purpose of the work in the third semester of the M.B.A. program is to provide advanced tools of analysis and a general framework of understanding within which those tools can be applied. The relationships among the parts of the firm and the relationships between the firm and the various sectors of its environment can be classified into those which

are competitive and those which are cooperative. (Obviously, the relationships between any two organizations are likely to contain both competitive and cooperative aspects.) The primary thrust of the work in this semester is focused on more advanced analysis of how the firm's internal relationships and actions are related to its external relations and actions. Since the legal framework is closely related to these matters, an introduction to some aspects of the law is included. Prerequisites for this set of courses are the courses in the first-year M.B.A. program. The first two courses listed are offered throughout the third semester of residence.

B. Adm. 312. ***Operations Research.*** Mathematical models of various aspects of economic operations are developed and solved, including topics in the areas of queuing, inventory, and maintenance. General procedures for the solution of mathematical problems involving the identification of maxima and minima are studied along with simulation and the use of the computer for the generation of solutions. (4 units)

B. Adm. 349. ***Law as a Constraint for Business.*** Major laws that specify the rules within which the firm must operate, including some aspects of the commercial code, anti-trust law, labor and fair employment law, the most significant regulatory agencies and court cases that assist in understanding the application and interpretation of the law are studied.

The first three courses listed below (B.Adm. 302, 303, and 332) are taught during the first eleven weeks of the semester and are designed to provide the basis for B.Adm. 304 which occupies two-thirds of the student's time for the last three weeks of the semster. (2 units)

B. Adm. 302. ***Cooperative Relations and Decisions.*** This course deals with the firm's external relationships: i.e., determination and choice of cooperative economic behavior in order to effect exchange transactions in the best possible way. The efficiency and stability of various forms of cooperative vertical market structures under simple competitive conditions are examined rigorously. The problems involved in development of solutions in more complex situations are studied. (2 units)

B. Adm. 303. ***Competitive Relations and Strategies.*** Market competition, including game theory and its further development in terms of competitive market action is the primary topic of this course. Solutions to purely competitive problems are derived: i.e., the nature of the market, its relation to the best strategy for the firm and its internal operations.

While the more advanced and rigorous portions of the course are mathematical and theoretical, increasing emphasis is focused on the practical application to markets and the development of realistic competitive marketing programs. (3 units)

B. Adm. 332. ***Organization Design.*** The economics of organization structure and design form the main subject studied. The problems of using decision rules and related information as alternatives for coordinating units within the organization, and the choice of decision

rules are discussed. In general, the course deals with the economics of coordination, specialization, and control of components of both "market" and "nonmarket" organizations and includes organization design, problems of selective control and coordination, and determining the best degree of centralization of decisions. (3 units)

B. Adm. 304. ***Cooperative-Competitive Relations and Decisions.*** Simultaneous treatment of the firm's competing and cooperating strategy choice is studied through examination of the firm's total set of external decision variables, i.e., those dealing with its relations to those economic units with whom it cooperates to effect exchange transactions, and those with whom it competes and cooperates to affect and regulate this competition. The solution of various forms of cooperative-competitive market games with disjoint and joint sets of buyers and sellers is the aim of the analysis. (2 units)

Second Year Courses—Spring Semester

This final semester of the M.B.A. program is oriented to bring to application the foundations built during the first three semesters. Hence, the bulk of the work in this semester is directed toward understanding and solving problems of the firm, using the tools of analysis and the conceptual framework developed earlier. The only specifically required courses are B. Adm. 350 and B. Adm. 390. Each student must elect two other courses offered in the School or select with the approval of a faculty advisor acceptable courses in other departments of the University which meet the specific needs of the student.

B. Adm. 350. ***Public Policy of the Firm.*** This course is focused on analysis of the relationships between the firm and the three segments of society: the public at large, the organizations and individuals in close contact with the firm, and the members, or employees, of the firm.

Some of the problems involved in selecting the ends and restraints from among feasible alternatives are: i.e., the problems of developing a policy of the firm toward the society of which it is a part. (3 units)

B. Adm. 390. ***Practicum.*** The practicum is individually designed. Each student is required to engage in the practical solution of one or more problems of an economic enterprise. The project selected must be closely related to one of the elective courses selected by the student. Each of the electives is oriented toward the solution of practical problems, and the practicum is intended to provide some experience in designing and implementing a plan or solution and, in so doing, to provide some experience in independent study focused on the development of a useful plan or solution. (5 units)

B. Adm. 313. ***Advanced Operations Research.*** Application of opera-

tions research to business problems. The problems of organizing for a study, formulation of the problem, model construction, interpretation of analytical results, and implementation are stressed. Selected cases of particular application of operations research from the literature will serve as basis for much of the class work. Students will work in local industry, the University, the medical center, or other cooperating agencies on operation research problems. Methodologically, some attention will be devoted to advanced solution techniques as necessary to complete student projects, but primary attention will be focused on formulation and use of models; the modification of existing models, or development of new ones. (4 units)

B. Adm. 323. ***Controllership.*** The focus of this course is on developing systems for collecting and summarizing data in a manner which meets the requirements of the management team in controlling and planning operations. The function of the controller, as the center of synthesis and analysis of data, is studied in the context of the foundations established during the first three semesters. (4 units)

B. Adm. 324. ***External Reporting and Auditing.*** This course builds on the information systems sequence of the first year and the public policy course, B. Adm. 350 in terms of developing requirements of the system for reporting to parties, external to the firm, who have need for information about the activities of the enterprise for decision making purposes. Communication and measurement problems as well as the role of the independent auditor in developing evidence of and attesting to the reliability of data will be studied in detail. (4 units)

B. Adm. 333. ***Manpower Planning and Management.*** Application of behavioral and economic theories and of quantitative techniques to management of the firm's human resources, including treatment of both labor and management personnel, form the primary subject matter of this course. Detailed examination of American occupational structure (e.g., mobility patterns, increasing specialization and professionalization) and analysis of the labor union as an institution are included. Topics studied within the constraints of occupational structure, and educational and labor institutions, are: employee testing, selection, and assignment, training and development, performance evaluation and optimal incentive systems, strategic and tactical factors in collective bargaining. (4 units)

B. Adm. 351. ***Finance.*** The management of the financial affairs of the firm, in its attempt to develop an optimal capital structure, includes: (1) the sale of corporate securities of all varieties and the related knowledge about the requirements of investors at particular points in time, and (2) the translation of plans and programs into needs which must in turn be met by cash resources from either internal or external sources. (4 units)

B. Adm. 353. ***Marketing.*** An application of the general theories previously studied to the firm's marketing problems. Definition and resolution

of these problems involves a more detailed discussion of the existing market environment of the firm. Problems studied are those of consumer behavior, marketing structures, product planning, pricing, promotion, logistics, and marketing research. (4 units)

B. Adm. 355. ***Production.*** The purpose is to give the student experience in applying the theories developed during the first three semesters to problems of professional practice in the area of production management. Two major problem areas are covered: the design (or planning) of manufacturing systems and their operation (or control). Sub-topics under design include plant layout, economic evaluation of materials, methods, and processes, facilities planning. Sub-topics under operation include cost, inventory, and quality control, short-run scheduling and capacity utilization, maintenance, start-up problems, equipment replacement. (4 units)

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